

HP

APRIL 1994

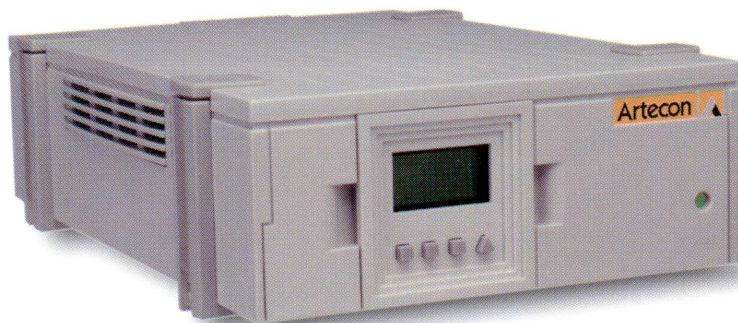
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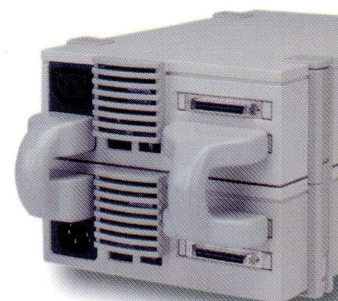
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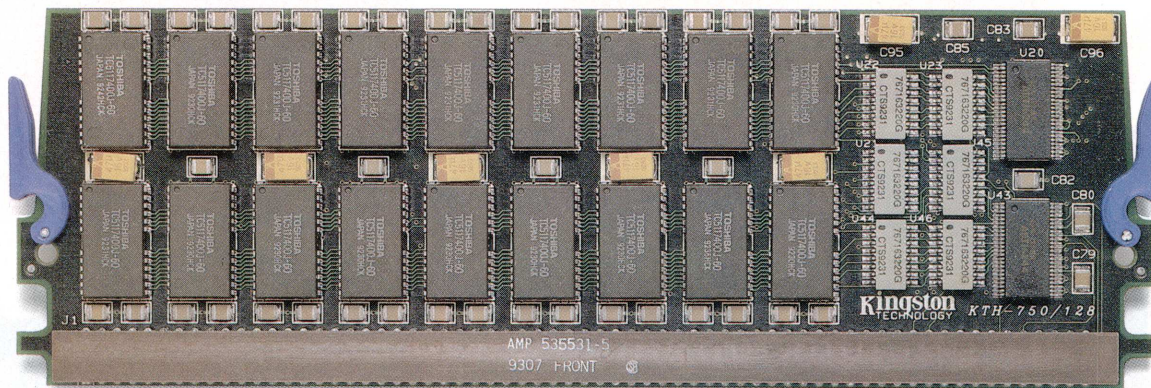
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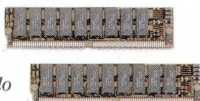
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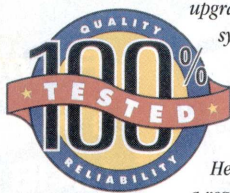
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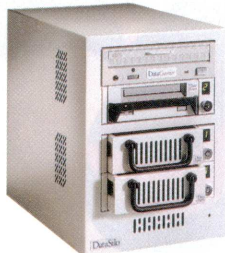
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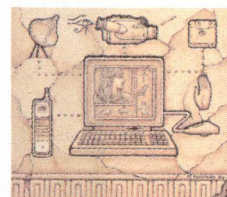
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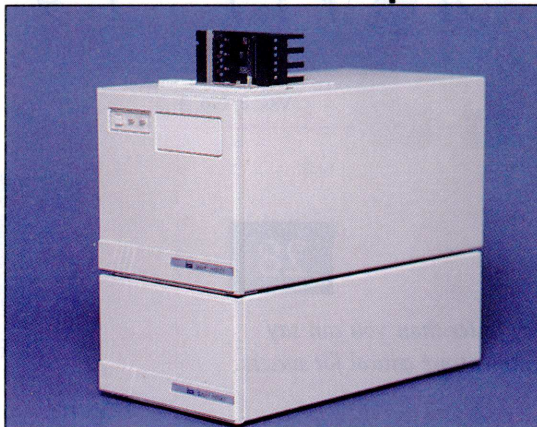
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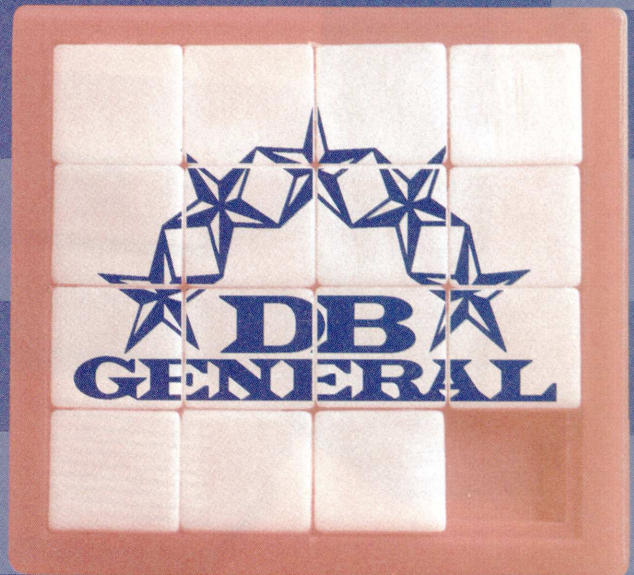
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It's Not Dead Yet!

Long Live The Proprietary System!

Wait, don't get your vision checked just yet. You are reading this correctly. In all of the recent surveys conducted throughout the planet, 9 out of 10 computer users say they fear open systems and loath distributed computing. Today's users crave the security of proprietary systems.

"At least when we're locked into the mandatory annual price increases we'll know what to budget for next year, and not have to wonder what distributed computing will cost," declared one inflexible IS manager.

"Who really wants the hassle of open systems? Dealing with multiple vendors and contracts. It's like walking down Bourbon Street. All those bars to choose from, and temptation usually gets the best of you. Then, sure, you get drunk; but when you're sick on a corner at two in the morning ... it's disgusting," offered another overly honest system administrator.

APRIL FOOLS! OR IS IT?

At Executive Interex last month Rich Seveck, general manager of the HP Systems and Servers Group, told me he avoids the term distributed computing. Why? Because, like client-server computing, the phrase opens a Pandora's box of definitions. In fact, most of the HP folks I spoke with in N'awlins tended to shy away from such harsh expressions like client-server and distributed computing and leaned toward gentler terms of confusion such as "desktop integration."

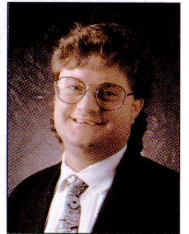
However, after concluding a week-long press tour and spending a few days relaxing in the Big Easy, I've learned two things. One, that despite the latest headlines, the entire free world has not successfully implemented client-server (or whatever you choose to call it) technology. I've also learned not to eat two pounds of "mud bugs" and a bottle of Blackened Voodoo for breakfast. Some lessons don't come easy. So if you're still investigating, testing and evaluating the big C-S, rest assured. You're not falling behind the Young Turks boasting of their distributed prowess, in fact you're running with the crowd. However, if you're not at least looking and questioning, then maybe you need to get back to the basics.

This month, *HP Professional* takes a look at some of those basics and our need to draw on the past while planning for the future. To do this, our authors explore the changing face of imaging, the maturity of networked multimedia and the latest workstation fashions, as well as the chip house that PA-RISC built.

Document imaging, which until recently was a luxury only available to large financial, medical and insurance institutions, is now making its way into mainstream computing shops. Today, industries from independent retail shops to local utilities can afford to take advantage of imaging technologies, including the surreal world of multimedia.

We are returning to the fundamentals of communication, that of sight and sound. Since the days of cave paintings, humans have used images and symbols to convey ideas, record their history and plan their tomorrows. And the resounding call of drums and horns have carried messages across great divides to warn of danger, to announce a victory or simply, to order take-out. Now, as imaging and networked multimedia leap from the headlines, you'll be sure to find them integrated on the desktop of your choice.

But, we can only wonder whether there exists such a restrictive mortmain that will cause companies to cark and, therefore, hesitate to adopt these technologies.



By Charlie Simpson

Charlie Simpson

Peeking In The HP OpenMail Bag

Electronic mail is such a staple in today's computational diet

that many think nothing of being able to send and receive messages from halfway around the world. Corporations routinely enable their workers to flood the wires with communications destined for colleagues around the globe. Within HP, workers worldwide can communicate relatively easily from desk to desk. The same is true for employees within IBM, DEC, Apple, Intel, GM, Hitachi or hundreds of other firms. But to make some of these systems work, somebody had to work behind the scenes.

Some firms may have three different mail systems in use, held together at some central location by a nameless hero or heroine in the IS department using everything from bailing wire to custom software to tie these disparate tools into usable systems. E-mail systems increasingly need to communicate with one another, even if they have very different underlying systems.

HP Fills The Breach

Several firms are stepping into the breach to meet the needs of E-mail users, as well as quiet the cries for help from the post-PROFS crowd. IBM withdrew support for PROFS a year ago, leaving the E-mail networks of thousands of users looking for alternative solutions robust enough to meet their future needs. Products from

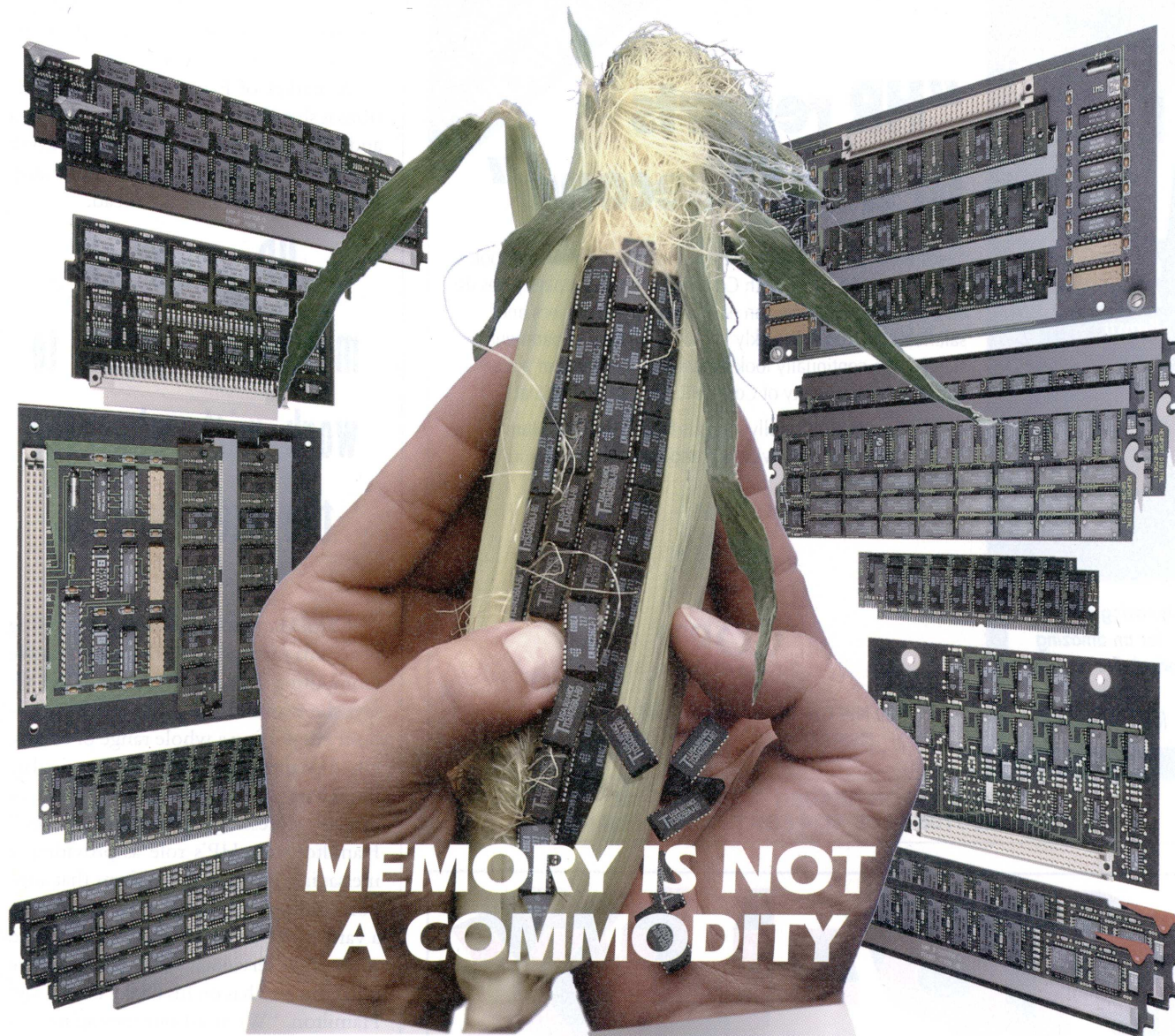
Lotus, Microsoft and DEC appear promising, but not for another year, say analysts at the Meta Group Inc. (Westport, Conn.).

One of the best alternatives appears to be HP's Electronic Messaging Solution (EMS), based on HP OpenMail and HP X.400 (with a lot of help from its friends). Reports from both the Meta Group as well as the Gartner Group (Stamford, Conn.) identify HP's OpenMail as the one to watch and perhaps acquire. Part of the reason for the favorable reviews of HP's E-mail offering is that not only does the HP product provide the necessary services, HP has also forged partnerships to improve the product and broaden its applicability.

SoftSwitch Inc. (Wayne, Pa.) provides its Enterprise Mail Exchange (EMX) messaging backbone system for use with OpenMail as part of a joint marketing and support agreement with HP.

LinkAge Office Information Solutions Inc. (Ottawa, Ontario) agreed to supply gateways for HP's Electronic Messaging Solution. Users in IBM MVS, VM and AS/400 environments can link to HP's messaging system through LinkAge's SNA Distribution Services (SNADS) and OfficeVision/VM (PROFS) gateways for HP OpenMail.

Dexotek Canada Corp. (Kirkland, Quebec) in a marketing and support agreement with HP, will use OpenMail as the transport for its client-server-based Unison 2.0 corporate scheduling services application. Unison works on HP 9000, IBM RS/6000 and Sun server platforms. Unison client interfaces work with Windows, NewWave, HP Motif workstations and PROFS-like ASCII interface for other systems.



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A market of E-mail-enabled applications is shaping up to be a hot growth area and HP aims to be part of the action. Look for further applications to be built atop OpenMail in the months ahead.

HP wants its messaging system to work with whatever the user chooses.

Carol Hamilton, messaging marketing programs manager for HP's Cooperative Computing Systems Division (CCSY), says she wants HP to provide "the backbone supporting a whole range of clients, whether they are E-mail, electronic data interchange, document management or directly accessing messaging services." Hamilton sees HP's role as providing a messaging integration platform that supports industry standards while integrating a variety of both front-end and back-end messaging services. "We don't dictate what the user has on his or her desk," says Hamilton. "We want our messaging system to work with whatever tools they choose to use."

As evidence, Hamilton notes that HP's EMS is the only product that today can show these back-end clients on one system:

- Lotus cc:Mail for Windows and OS/2
- Microsoft Mail
- HP 3000 DeskManager
- HP 9000 OpenMail

HP has new versions of its own EMS clients, including:

- IBM AIX
- Apple Macintosh
- HP-UX
- Sun workstations

HP supports messaging APIs, including VIM, MAPI, CMC and X/Open, and plans to support VIM 2.0 as well as Microsoft Schedule+.

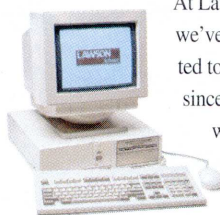
Sharp's Internet address:
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HOW TO UNRAVEL THE CLIENT/SERVER MYSTIQUE.

First, accept that there is no mystique. Rather, there are hordes of slightly frantic software companies content to have you believe that effective open system solutions remain elusive while they rush to understand, develop, and market their interpretation of client/server. Then there's Lawson Software.

An Open Systems Foundation



At Lawson Software, we've been committed to open systems since our company was founded in 1975. We've always believed that to be a valuable business partner, an applications provider must offer choices for business strategy development. So for us, client/server isn't a new phenomenon. Instead, it's the next logical step in our development. And it exists today – fully developed and fully functional – in the latest release of our enterprise-wide, cross-industry, world-class business application software.

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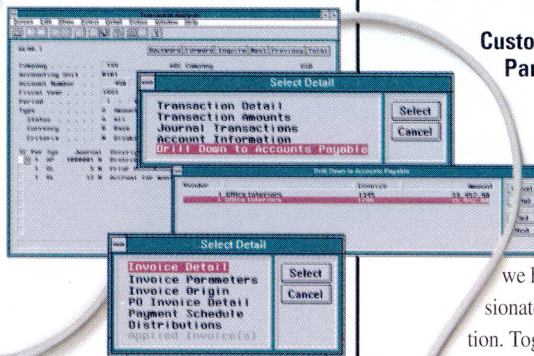
The truth is, client/server takes on a special meaning for each individual business computing environment. That's why we've structured our client/server solution as a comprehensive 3-tier architecture, delivering you maximum flexibility in hardware, database and user interface. It's why Lawson's products run across platforms like the AS/400 as well as UNIX systems such as the RS/6000 and HP9000. And it's also why we feature seamless support for a variety of leading databases. In short, we offer options that allow you to make the decisions. Based on your

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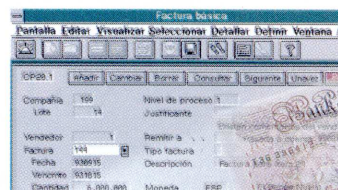
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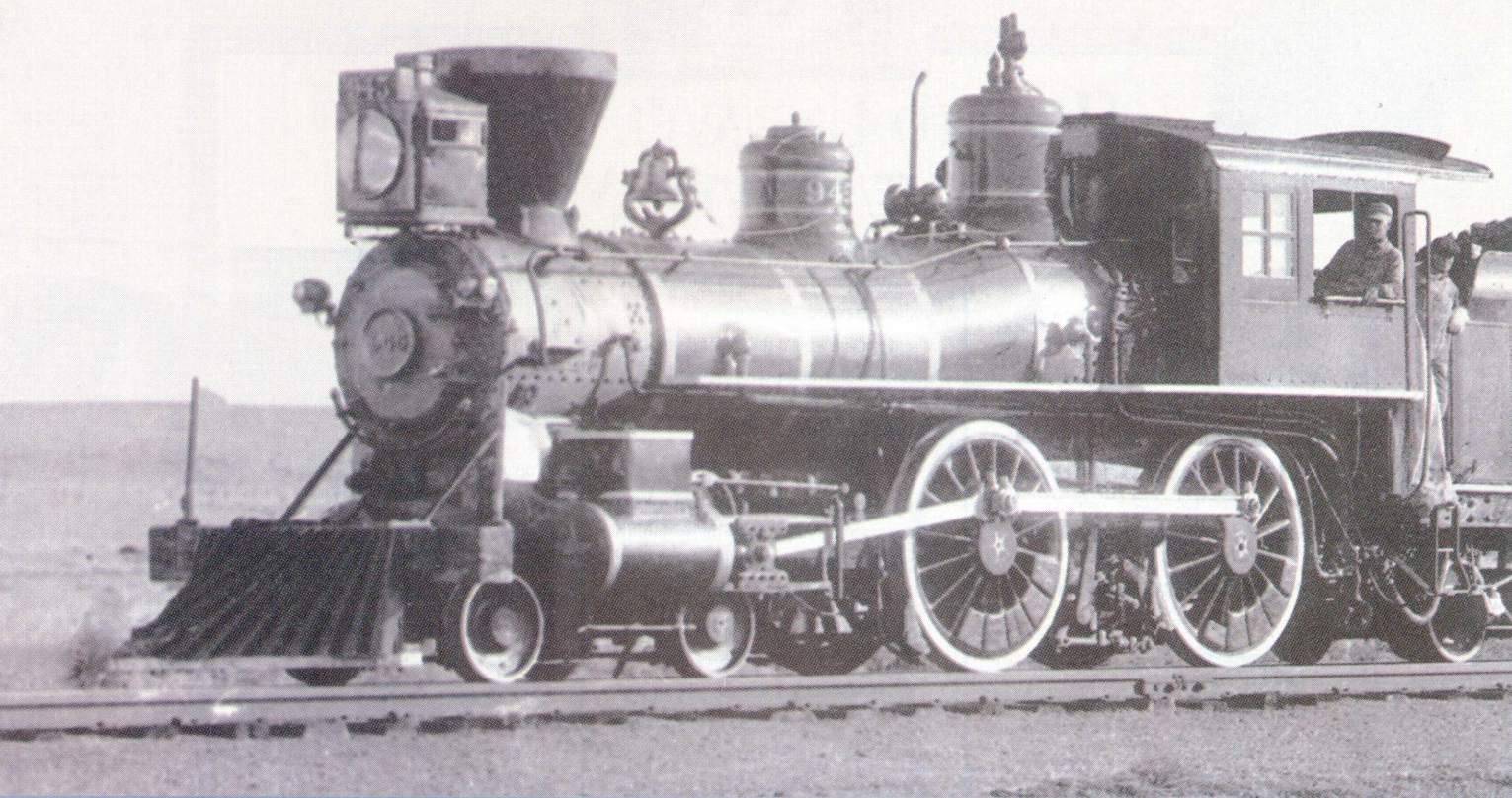
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LETTERS TO THE EDITOR

Untying The Gordian Knot

I couldn't agree more with what was said in Richard Riehle's "'Killer' Software" article in the February 1994 issue. His comment in regards to "Get it out the door now, we'll fix the bugs later!" is right on target. It's to the point now that I've decided to quit and go back to school to get my master's degree. Hopefully then, I'll be able to re-enter the workplace in a slightly more authoritative position where I can convince the "powers that be" to increase their commitment to quality in software design and reliability. I would be grateful if you could send me a list of the universities you're aware of that offer a graduate degree in software engineering.

Sam Goosen

By far the best Masters of Software Engineering Program is at Carnegie-Mellon University. Another Program is at National University in San Diego. —RR

I just finished reading [Richard Riehle's] "Killer' Software" article in the February 1994 issue. I totally agree with him on the difference between "bugs" and "mistakes." All too often poor code is the result of someone who didn't take the necessary time to design the software well, or they don't care about the quality as much as they should.

It was nice to see these ideas in print. If only there was a solution. The answer won't come in a software package, the answer has to come from within the software developers. I think that undergraduate software engineering courses would help.

Rick Hebert

**CAD Systems Administrator
Lockheed Engineering & Science Co.**

We all need to be focusing attention on this reliability issue. Our clients, and consequently the software with which we work, tends to deal with safety-critical issues. That is why so much of our effort involves the use of Ada. But no programming language, by itself, is the answer. We need to train our people better, improve our development and life cycle methods, and begin to take more of an engineering view of our process.—RR

Re-Engineering

I concur with [Gordon McLachlan's] thoughts on re-engineering [in the February 1994 issue]. It seems that one never has enough time to do the job properly the first time around. Whether this is the result of inadequate definition, shoddy design, or simply a natural tendency to rush headlong into something new, is hard to say.

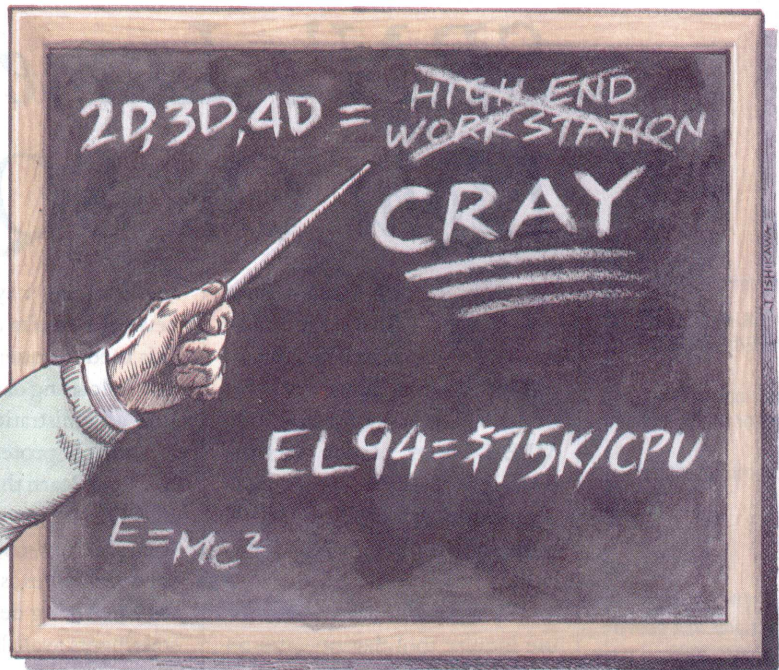
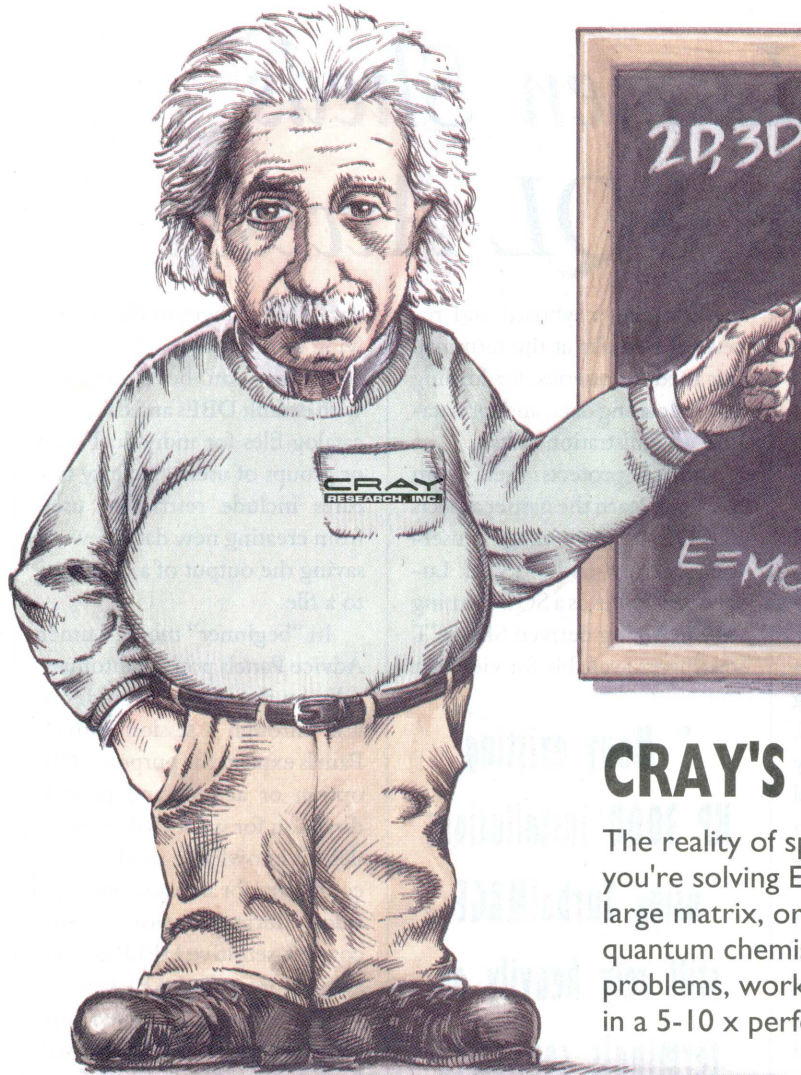
In any case, [McLachlan is] right in saying that we have the tools, we just have not yet learned how to use them in a disciplined manner to produce a result that will stand for more than a few months. It would be nice to one day have the feeling that the cathedral will not collapse.

**Lawrence G. Manns
Senior Engineering
Programmer / Analyst
Uniform Tubes Inc.**

HP Professional welcomes comments from its readers. Letters may be edited for brevity and clarity, and should be addressed to: HP Professional, 101 Witmer Rd., Horsham, PA 19044. Fax number: (215) 957-1050. Internet address for staff listed on the masthead: LASTNAME @ CARDINAL.COM

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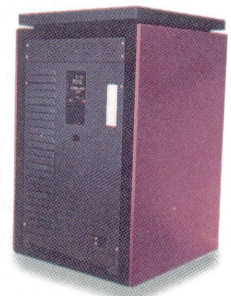


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SRN's Lumen Sheds Light On SQL Access

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Circle 353 on Reader Card

With Lumen from Software Research Northwest (SRN; Vashon Island, Wash.) using SQL is easier for HP 3000 MPE/iX users. Lumen is a windowed, SQL-driven, point-and-shoot interface for HP's IMAGE/SQL and ALLBASE/SQL databases.

SRN has created an easy-to-use inquiry tool that operates on ordinary terminals or PCs running terminal emulation software. And, unlike most SQL-based inquiry tools, Lumen operates across serial connections. This makes Lumen attractive to HP 3000 MPE/iX TurboIMAGE sites.

Although HP has emphasized IMAGE/SQL's accessibility to several SQL client-server tools for viewing, analyzing and manipulating data, it has not stressed that most of these tools require a LAN environment—that means PCs running Microsoft Windows. As Wayne Holt, president of SRN, points out: "Many existing HP 3000 installations using TurboIMAGE still rely heavily on terminals connected serially to the HP 3000 host."

HP does provide a product called ISQL (Interactive SQL) with the purchase of either ALLBASE/SQL or IMAGE/SQL that operates in a terminal environment. ISQL, somewhat analogous in function to TurboIMAGE's QUERY/3000, is a SQL command processor that lets users enter SQL state-

ments at the keyboard and receive the results at the terminal. It is used for queries, for loading and unloading data, and for database administration tasks.

Lumen protects users from having to learn the nastier aspects of SQL by providing a user-friendly front-end to ISQL. Lumen also serves as a SQL learning aid by making derived SELECT statements available for viewing.

**"Many existing
HP 3000 installations
using TurboIMAGE
still rely heavily on
terminals connected
serially to the
HP 3000 host."**

Lumen prompts the user for input that can be entered directly or chosen from a Lumen-generated picklist. Lumen then creates a syntactically correct SQL SELECT statement, executes ISQL and sends off the SELECT statement to be processed. The results are returned to a data view which can be printed or saved to a file. Once a view is created, users can reuse existing definitions to view

data after changes to the underlying databases.

Lumen can be customized with default DBEs and data view catalog files for individual users or groups of users. Security features include restricting users from creating new data views or saving the output of a data view to a file.

In "beginner" mode, Lumen Advice Panels pop up automatically on the screen to guide the user through a session. Advice Panels explain the purpose of the option or action, and provide direction for what to do next. A default knowledge mode can be configured for any user, but overridden during a session. Online, context-sensitive HELP is available by pressing the F1 key.

Data views can be saved (provided security rules are satisfied) in a view catalog for future use. Saving a view means saving the SELECT statement and any other associated items necessary to fetch the data. When the user retrieves a view from a view catalog, the data can be refreshed to account for any changes that have occurred in the databases or tables.

A dated copy of Lumen has been included in HP's IMAGE/SQL Quick Start Kit which is being shipped to every site with IMAGE/SQL. An eight-user license for Lumen is available for \$2,400. Each additional four users costs \$800.

—John P. Burke,
HP 3000 Editor

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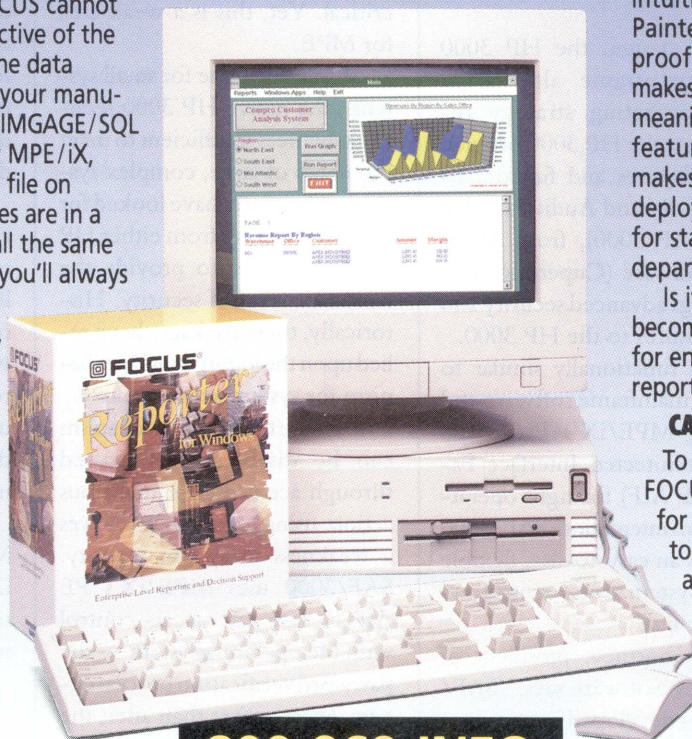
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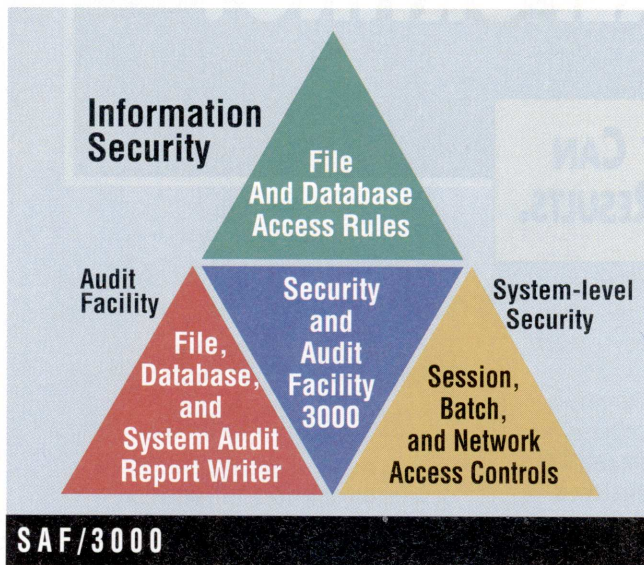
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Circle 351 on Reader Card

By design, the HP 3000 mainframe alternative marketing strategy requires that the HP 3000 provide similar features and functionality. Security and Audit Facility/3000 (SAF/3000), from Monterey Software (Cupertino, Calif.) brings advanced security and audit features to the HP 3000.

With functionally similar to popular mainframe software and utilizing MPE/iX's Procedure Exits Architected Interface Facility (PE AIF) for tight operating system integration, SAF/3000 provides an easy-to-use, flexible file and system access control and audit facility.

Lee Courtney, president of Monterey Software says, "SAF/3000 was developed in conjunc-

tion with a major HP account that was also a user of [Computer Associates' Access Control Facility 2 (ACF2)]. In addition to providing the same access control and audit functionality of ACF2 and [Resource Access Control Facility (RACF)], SAF/3000 was designed to provide improved flexibility and ease of use." Existing HP 3000 security relies on passwords at the user, account and group levels, lockwords on files, and a group and account level file access matrix. Because the greatest risk of computer abuse is from authorized users, file access controls are critical. Yet, this is a weak area for MPE.

While adequate for small systems, the native HP 3000 security scheme is insufficient to meet the needs of large, complex systems. These sites have looked for add-on packages from either HP or third parties to provide the necessary level of security. Historically, these packages have relied upon the logon UDC mechanism for system access control.

Because the UDC mechanism can be disabled or bypassed through accidental or malicious action, using logon UDCs leaves a weakness in system security. SAF/3000 uses MPE/iX's PE AIF to integrate access control with the operating system — the password verification process occurs *before*, rather than after, the user gains any system access.

SAF/3000 provides access

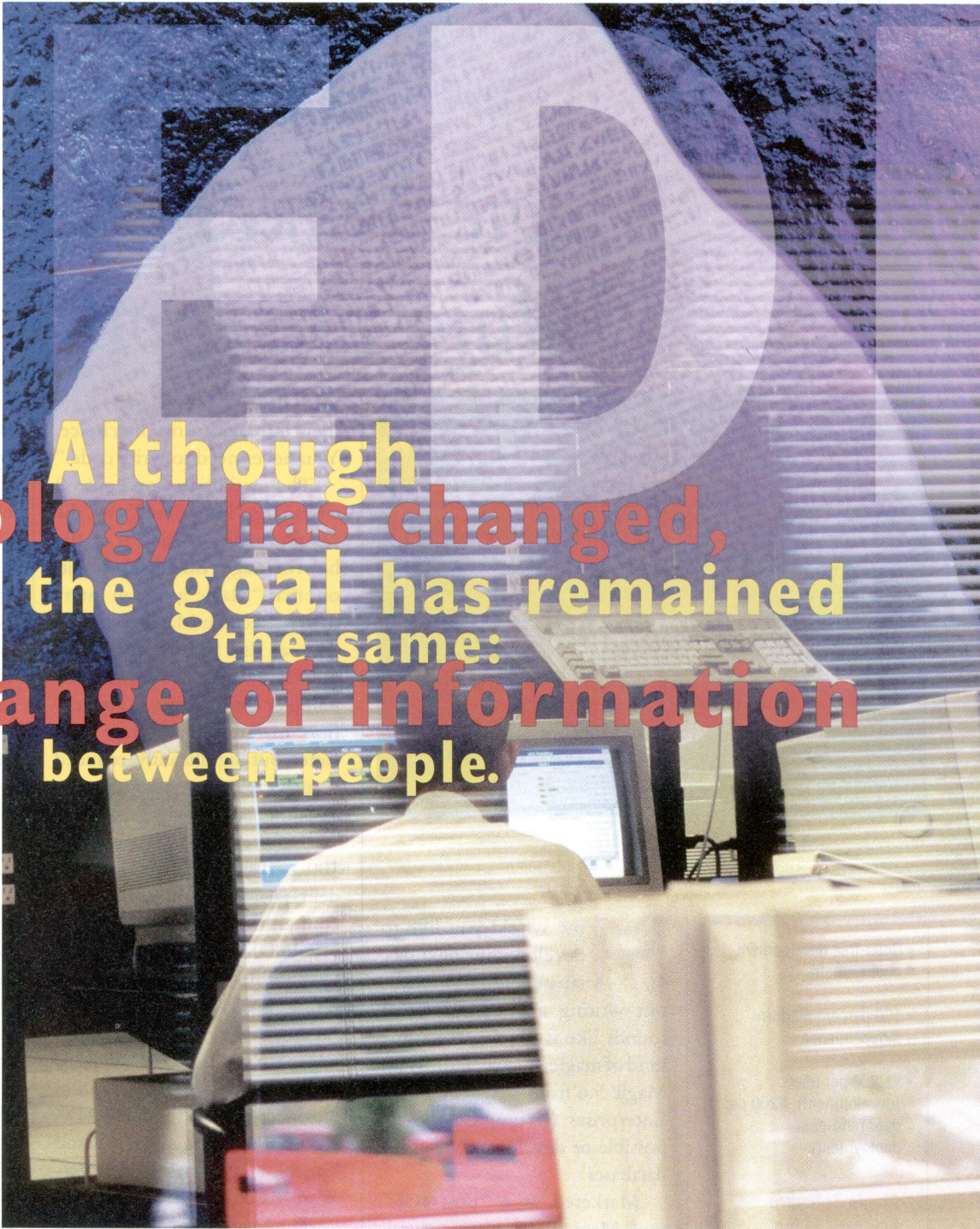
control through required and minimum length passwords, encryption, expiration dating and password histories. Session names may be used to differentiate logon IDs and logons can be restricted by date, time and device. SAF/3000 eliminates embedded passwords, or password prompting in batch jobs. Permission to stream another user's job must be explicitly granted.

By default, SAF/3000 allows only the owner of a file, database or device to access it. Owners may create access rules allowing access based on logon ID, program, type of access, date, time, day of week and logon device. SAF/3000 has a full screen editor for maintaining access control rules. Up to 64 rules can be defined for any file, database or device.

SAF/3000 can log unauthorized access attempts, changes to security controls, logons and logoffs, device, database and file opens, job streamings and password changes. A built-in audit report writer can be used by any user on the system to examine data for owned objects, including files or databases.

SAF/3000 is supported on MPE V/E (V-MIT+) and MPE/iX 3.x. Prices range from \$3,000 to \$11,000 depending on CPU model.

—John P. Burke,
HP 3000 Editor



Although
technology has changed,
the goal has remained
the same:
exchange of information
between people.

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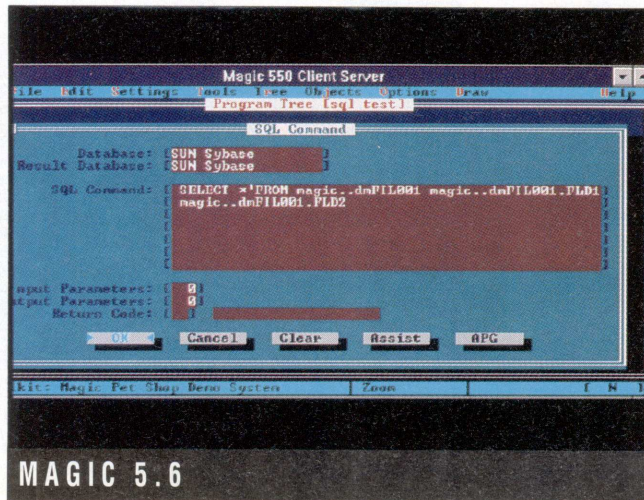
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How would you like to develop your next database application without writing any code? If that sounds like it would take some kind of magic, you're right. With Magic 5.6 from Magic Software Enterprises (Irvine, Calif.), it's possible to develop "code-free" databases.

Marketed as a "post-4GL" tool, Magic is a non-procedural, table-driven programming environment. "It's a technique whereby we use execution tables," says Miko Hasson, Magic's vice president of products. "Those tables allow you to edit and store 13 operations. You place them in the tables, and around them you can specify all the other pieces needed for a database application, like a screen designer. All you do is update

these tables, and Magic stores them in a database of your choice. You never need to write code."

The execution (or control) tables are "interpreted" by the Magic Engine, which is at the heart of Magic. But Hasson points out that "Magic is not an interpreter. Because Magic loads the data as is, it executes very quickly." Magic requires no compiling or data linking, so application maintenance is not only easier but significantly reduced than in typical programming environments.

Because the Magic Engine is 100 percent platform-independent, Magic runs on a variety of computing platforms including HP 9000 Series 700/800 systems; DEC VAX or Ultrix systems; NCR 3000 Series or NetFrame servers; Sun SPARC, IBM RS/6000, Data General AViiON or Silicon Graphics workstations; and PCs and PC servers running SCO UNIX and Univel, as well as Novell NetWare-based LANs.

The Magic File Manager then manages data that is retrieved from both relational and non-relational databases by issuing requests to one of the MagicGate gateways. The Magic File Manager also can consolidate data from different databases. Out of the box, Magic bundles an ISAM-based database gateway, Btrieve for DOS or C-ISAM for UNIX. Sybase, Oracle, Informix, DEC Rdb and RMS, and NetWare

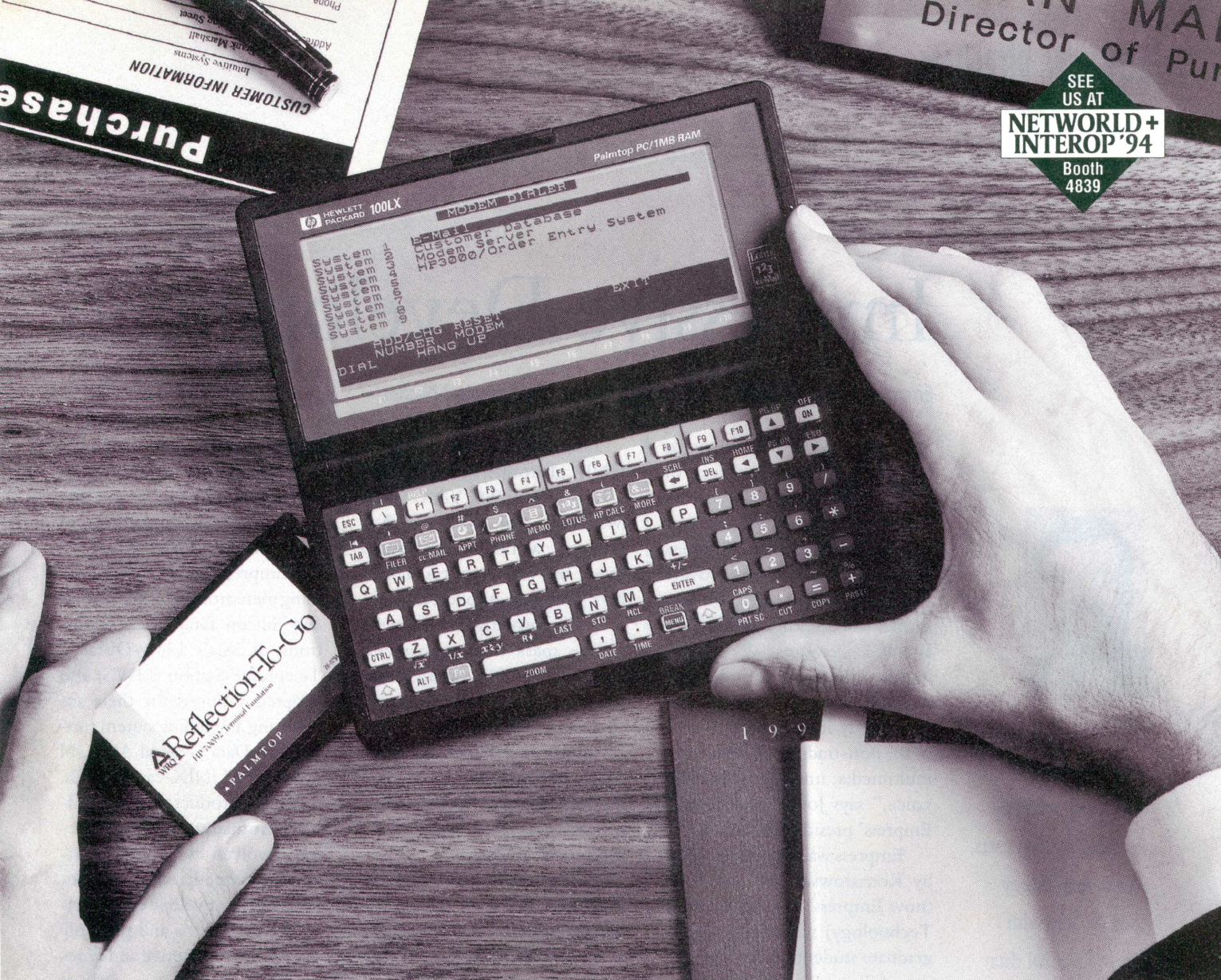
SQL also are supported, as are x-Base- and C-tree-based databases. Magic does not support HP's IMAGE/SQL or Allbase databases.

According to Hasson, "using our [table-driven] interface, you can quickly generate screens, reports, queries and updates. Magic will translate [those tasks] automatically to SQL commands, using our gateways. But if you need to get through to the SQL engine, you can do that too."

Porting Magic applications to other platforms is simply done by exporting and importing ASCII definitions. "Of course, the Magic Engine itself, is compiled and fine-tuned to work in different environments," says Hasson. For those HP shops moving slowly to client-server architectures, Magic runs natively and in client-server mode. "With Magic, you can support the same client-server applications on PCs and on dumb terminals," explains Hasson.

Although the development environment is character-based, Magic 5.6 was introduced in January 1994 with Microsoft Windows run-time capability. "The next version will have a full GUI," says Hasson. Pricing starts at \$1,800 per user for the development environment and \$200 per end-user deployment.

George A. Thompson,
Technical Editor



How Reflection-To-Go turns a palmtop into an HP 3000...

Jim felt his stomach tense. Two months' work is riding on this sale, and at last he is sitting in the client's office. Then the client asks, "How soon can you deliver?"

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Impressive Developments

Empress Software Extends its RDBMS Beyond Its Technical Niches



"We are going after the power C developer, scientific and engineering users, particularly if they want to deal with non-traditional data like multimedia, imaging, video and voice."

John Kornatowski
President and CEO
Empress Software Inc.

Empress Software Inc.

6401 Golden Triangle Dr.
Greenbelt, MD 20770
tel: (301) 220-1919
fax: (301) 220-1997
CIRCLE 352 ON READER CARD

When it comes to the business of high tech, you can either be on the leading edge or on the bleeding edge. Empress Software is one company actively seeking to place itself on the former with its Empress RDBMS and 4GL software. "We are going after the power C developer, scientific and engineering users, particularly if they want to deal with non-traditional data like multimedia, imaging, video and voice," says John Kornatowski, Empress' president and CEO.

Empress was founded in 1979 by Kornatowski and Ivar Ladd (now Empress' vice president of Technology) when they met as graduate students at the University of Toronto. After discovering that the microcomputer relational database system they developed under UNIX was better than one they had seen at Bell Labs, they donated the research project to the university, rewrote their application from scratch and began selling Empress in 1981.

The Empress RDBMS Version 6.2 includes ANSI SQL with "C"-level APIs, X Windows/Motif support, variable length binary data types for storing images, voice and text, and support for two-phase commit. Empress' 4GL includes kernel level X Windows support, 4GL mouse and touch screen support and sharable code libraries. The Empress Report Writer allows you to generate complex custom reports.

Empress runs on nearly all UNIX platforms, including HP-UX as well as DEC VAX/VMS, MS-DOS and Windows 3.x. Empress works in distributed mode on VAX-clusters, DEC-Net, NFS and Apollo Ring.

"We currently have [cooperative marketing] agreements with Cray and DEC, and through Japan with some of their super-computer vendors because we are ported to and working on the 64-bit environment," according to Kornatowski. "We can distribute our database across 32-bit and 64-bit platforms."

Because the Empress RDBMS can easily deal with image- and number-intensive applications, HP in Canada won a major bid with the Canadian Atmospheric Environment Services for use in weather forecasting. "A number of HP machines are located at sites around the country, they take input feed from remote sensors and logging apparatus, and track the weather for a three-day to one-week time period," says Kornatowski.

Empress also counts Auto-trol, Citibank, GT Space, Boeing Computer Systems, General Electric, Grumann Data Systems, TRW and Unisys among its U.S. commercial customers. U.S. government customers include the DoD, Commerce Department, Naval Research Lab, U.S. Space Command as well as the Army, Navy and Air Force. In Japan, NTT, the Japanese telephone company, is using Empress in

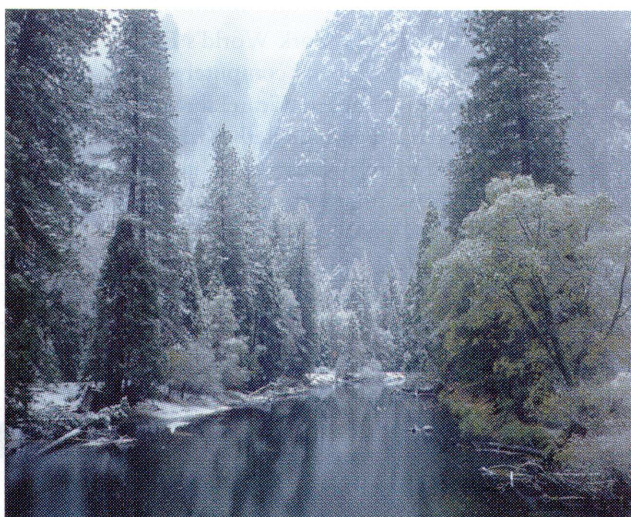
banking transactions.

Among Empress' European customers is the European Center for Medium-Range Weather Forecasts (ECMWF), who uses the Empress RDBMS for handling meteorological data on Sun and Silicon Graphics workstations. Russia's Long-Distance Telephone Station (LDTS) also adopted Empress for their accounting and billing system running on Data General AViiON servers and UNIX-capable PCs.

Future product plans, according to Kornatowski, include "being involved with object-oriented multimedia environments, pushing the envelope on knowledge base systems and probably going toward adaptive and time-sensitive databases as well as 4GLs." In March 1994, Empress announced a object-oriented GUI. Developed under X Windows and Motif, the GUI is now available under Motif on HP, Sun and Silicon Graphics hardware platforms.

In the next several years, Empress will be broadening its target markets. Kornatowski foresees financial and city planning as the next likely market segments. In three to five years, Kornatowski expects the privately-held company to grow 30 percent to 50 percent per year. "We are favoring a conservative policy of controlled growth," says Kornatowski.

George A. Thompson,
Technical Editor



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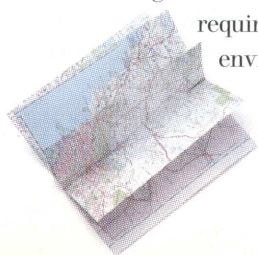
NBSpool, for MPE and HP/UX systems, also creates added flexibility by allowing jobs to be moved to any HP 3000 for execution. Spoolfiles are then either automatically kept or deleted once the move is complete. NBSpool makes all this possible with connectivity modules such as: JetDirect Printer

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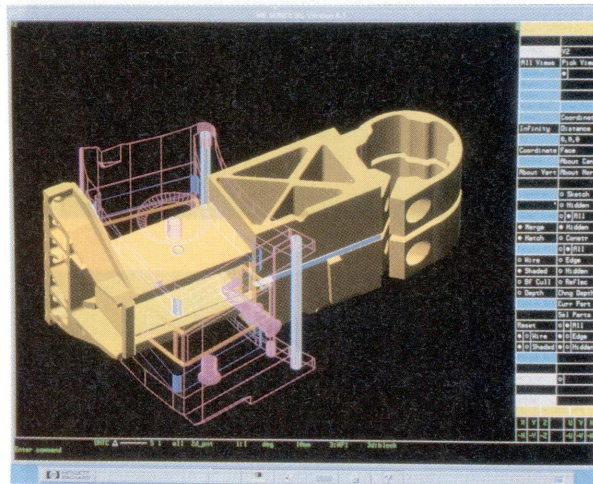


Modeling Made Easy

HP's ME30 Software Allows Leviton Manufacturing To Get Over The Hump

At the New York World's Fair in 1964, the Univac computer was on display. The American Library Association commented on that first commercial computer as follows: "The computer is only a fast idiot, it has no imagination; it cannot originate action. It is, and will remain, only a tool of man." Therein lies the paradox of all modern technology.

Leviton Manufacturing (Little Neck, N.Y.), a producer of electrical devices including light switches, telecommunication devices and surge suppressors, had been running a 2D modeling application on an IBM mainframe with 5080 workstations connected to it. Paul Greco, senior mold designer at Leviton, says that they needed to update their system to be able to perform structural analysis in a workstation environment, but it had to remain user-friendly. Greco says Leviton tried a CAD application from Structural Dynamics Research Corp. (SDRC; Milford, Ohio), but it proved to be too slow and no one used it. After evaluating six or seven other systems, Greco decided to use HP ME10 and ME30 Mechanical Design software because it would provide an easy migration to solid modeling. Greco also liked the available integration between 2D and 3D images and the way in which the windows were set up.



HP's Precision Engineering (PE) ME10 is a 2D design, drafting and documentation system. Based on the original ME10, it features a user

guidance systems for fast, accurate specifications of geometry, the capability to capture inherent geo-

continued on page 26

Chevron Strikes It Rich With Client-Server Financials

If you think the computer industry is competitive, consider the oil and gas industry. Since 1985, the price per barrel of oil has been in a virtual free-fall leaving the "Big Oil" companies overextended and over-capitalized. So "Big Oil" companies, like the \$40 billion Chevron Corp. (San Ramon, Calif.), require big solutions when reducing their operating costs and improving their market competitiveness.

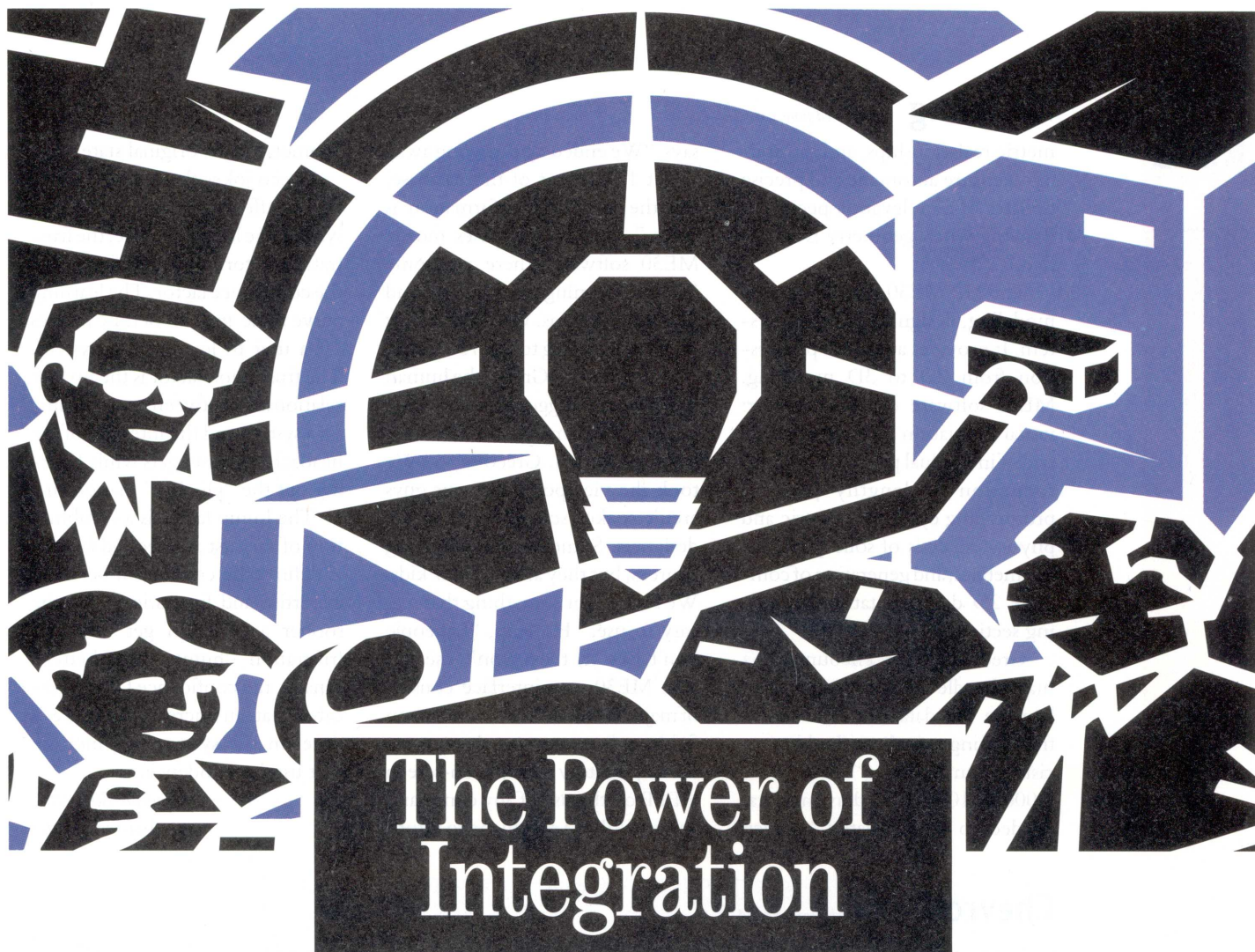
For Chevron, that means using their corporate financial system within a client-server architecture consisting of UNIX systems and PCs. "Our goal is to have a common financial system across our 15 operating companies," says Jim Zell. As project manager for Chevron's Advanced Financial Information Systems (AFIS), Zell is the man

responsible for ensuring that goal gets accomplished.

Already on the second year of a five-year mission, Zell expects to save \$25 million annually for "the applications that are within our scope." According to Zell, those applications include general ledger, accounts payable, work-in-progress accounting, intercompany, assets and fixed assets accounting, as well as financial consolidation and reporting. In the process, Chevron is putting a 30-year-old mainframe-based system out to pasture. However, Zell stresses that he is not just changing the systems, but "changing the way we do things," referring to Chevron's corporate culture.

Zell's new systems, supporting

continued on page 26



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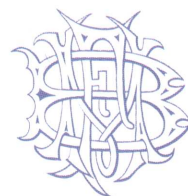
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Modeling continued from page 24

metric relationships, and the ability to ensure automatic and precise updates of all relevant aspects of a drawing when geometry is modified.

The HP ME30 is an integrated modeling, design and drafting system. It provides a smooth progression from 2D to 3D modeling. ME30 software can be used for: visual evaluation of overall design and of individual part relationships; reduction of lengthy physical prototyping cycles; geometric and physical analysis of solid parts and assemblies; and generation of complete 2D documentation, including section views.

Greco says they encountered a major hurdle when trying to translate the old data from the mainframe using a single to double precision conversion. "There were 6,000 to 10,000 2D drawings that needed to be translated," Greco

says. "We ended up throwing away about 15 percent of the database, but the important information is there." Leviton now uses mostly ME30 software (there are some ME10s) running on HP 710 and 720 workstations. Greco says they will be upgrading to HP 735s soon.

According to Greco, the human factor was the biggest obstacle when he chose to implement the new software system. Greco says, "We took the viewpoint that our guys aren't rocket scientists. They are designers. Some have engineering degrees, but they are not whiz kids. We looked for something that was easy to use." He adds, "If people don't like it, they won't use it." The ME30 user interface consists of major commands on tablet menu fields, sub-menus on the screen, self-explanatory prompts, on-screen HELP on the use of any command and an UNDO command to return

geometry to its original state.

Greco jokes that there are four factors affecting a user of a CAD system: the learning curve, the frustration factor, the hump factor and the confidence factor. The learning curve is the amount of time it takes for a user to learn a new system. The frustration factor is the inverse relationship between a user's time on a system and the intensity of the headache the user gets while figuring out the "glitches" that occur.

The hump factor is a combination of the first and second factors. It defines the correlation between expertise and frustration (i.e., the sooner a user can get over the frustration "hump," the better). Finally, the confidence factor indicates that an increase in a user's time on the system will increase that user's confidence.

—Deborah Schwartz,
Assistant Editor

Chevron continued from page 24

both IT development as well as production work, consist of HP 9000 Series 800 databases and HP 9000 Series 700 workstations running SAP America's R/3 client-server financial software. Taking advantage of the SAP's three-tier architecture, two HP 9000/890-100s and one T-500 are used as database servers (all centrally located in Chevron's data center in San Ramon, Calif. and interconnected via a FDDI network) and 12 HP 735 workstations running the financial applications within Chevron's private WAN. A variety of 486-based PCs provide individual productivity applications as well as E-mail throughout all of Chevron's subsidiaries.

A pilot system was successfully rolled out in a nine-month period last year at Warren Petroleum (Tulsa, Okla.), a \$2 billion Chev-



courtesy of Chevron

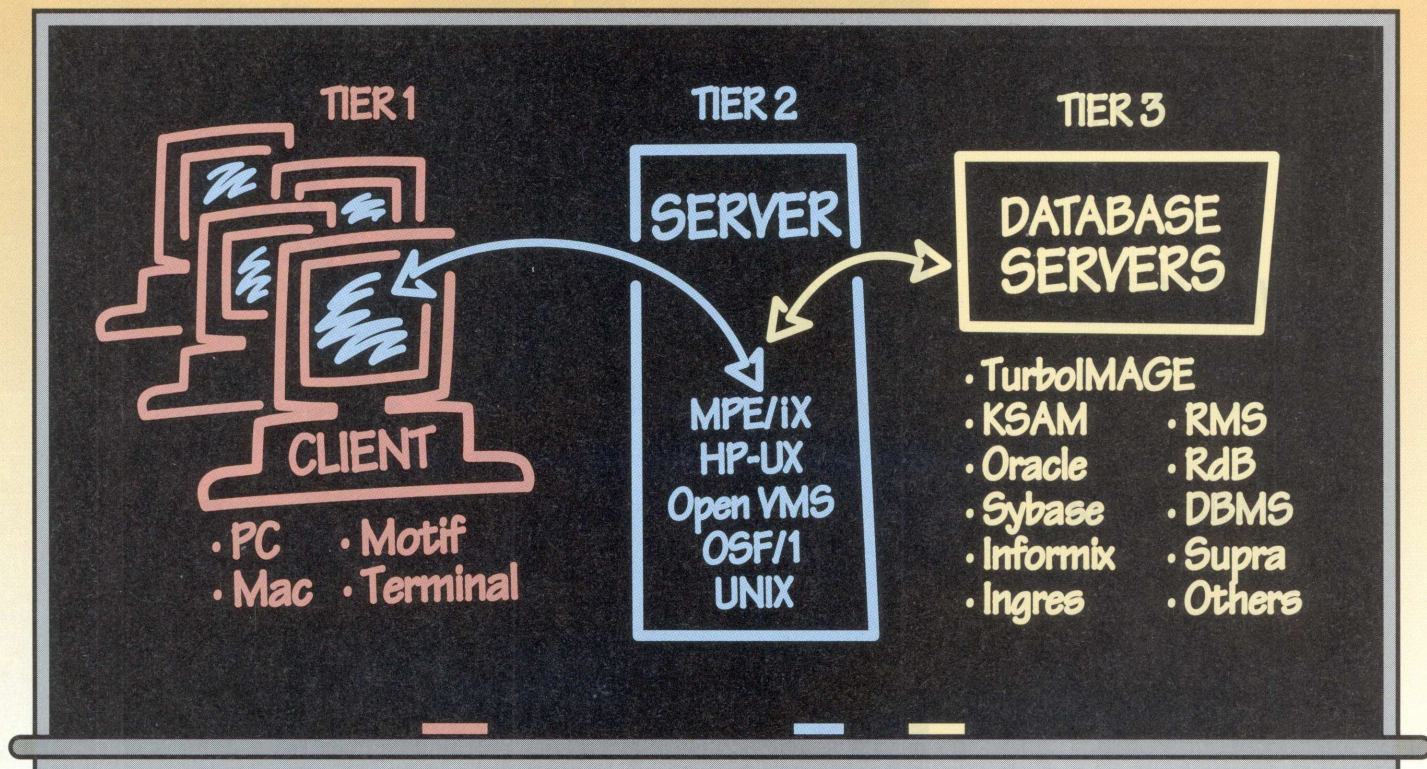
ron subsidiary serving as the pilot plant. Zell is now implementing the system at Chevron's corporate headquarters. Zell estimates the cost for the entire five-year plan to be somewhere between \$80 to \$100 million. But he quickly points out that the hardware and software costs only about 20 percent of that figure. The remaining costs are associated with project administration — design, testing, converting the data and training, for example. Zell

likes SAP's R/3 because "it allows us to use other databases."

For now, Zell has no complaints or regrets about his pure HP shop. "They delivered on time, provided good backup support, and their technical competency in understanding how SAP's software works with their systems was very high," says Zell. "But we are not locked into HP for the next five years," adds Zell emphatically. Like most savvy IS professionals, Zell knows that being successful means using any hardware and software combination he needs to get the job done. "HP must stay equal to or better than their competitors. Right now [HP is] doing a great job, but I'll have no problem using Digital or IBM systems if I need to."

—George A. Thompson,
Technical Editor

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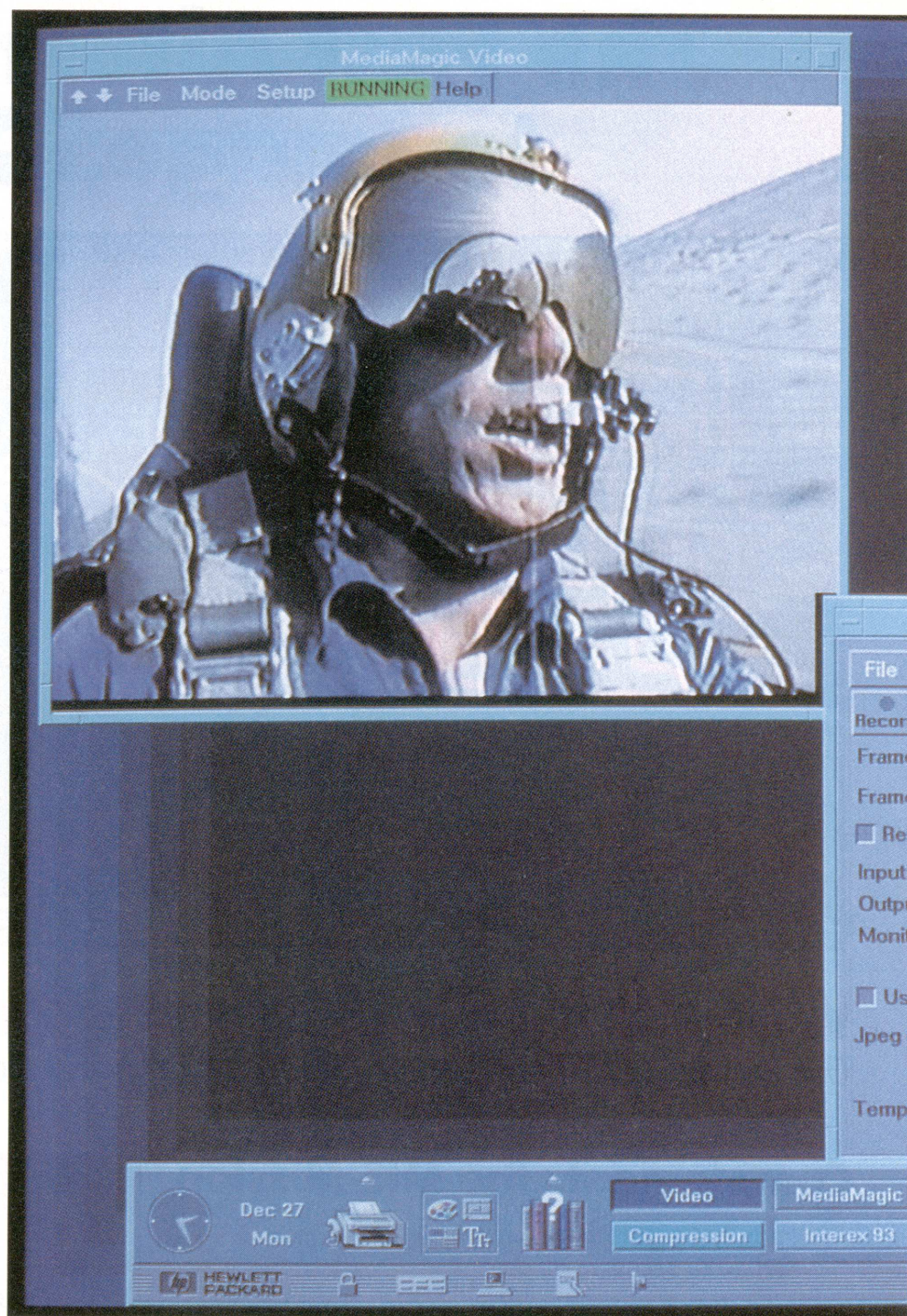
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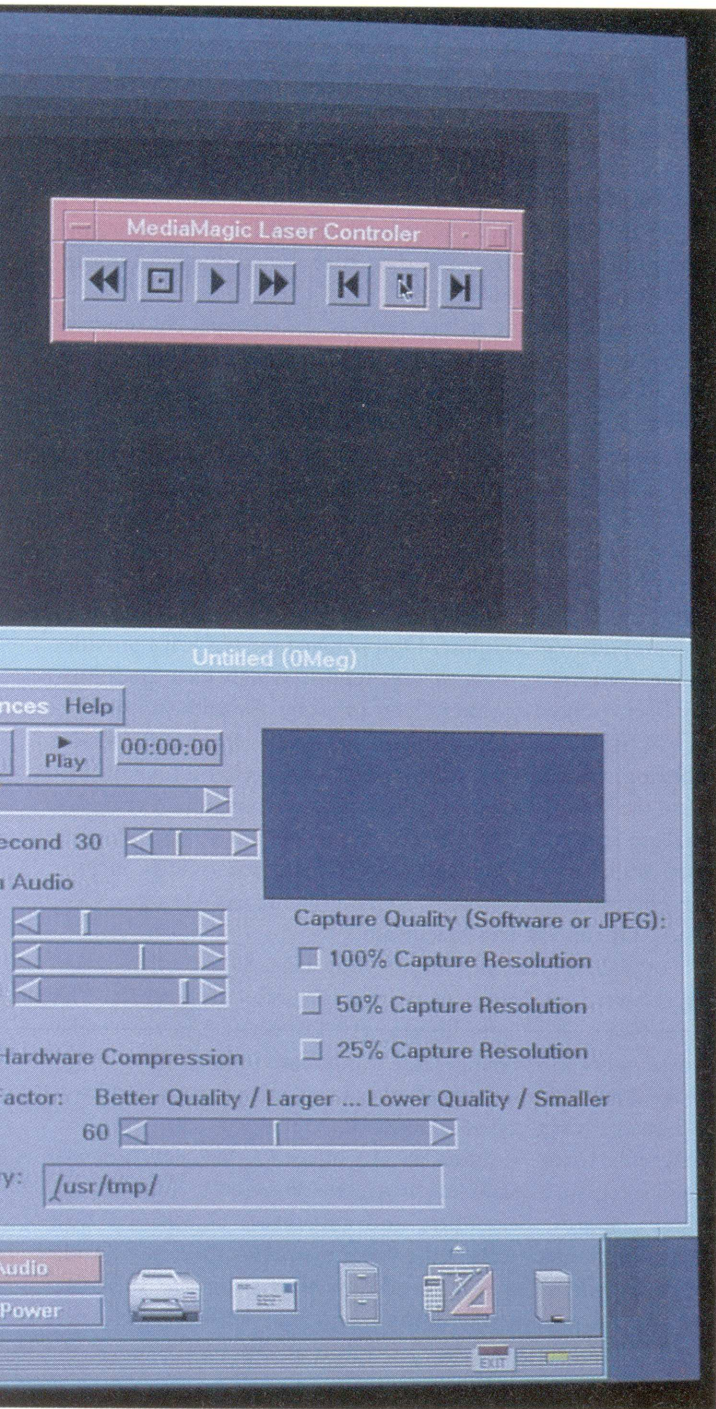
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IMAGINE



THAT

PAULA JACOBS

The face of document imaging is changing. A cross-section of industries now rely on document imaging to automate business processes, speed operations, reduce costs and improve customer service. For many businesses, imaging is also an essential element in their efforts to re-engineer the workflow process in order to deliver products quickly.

A few years ago only large financial, insurance and medical institutions could afford to use imaging technology. Today, document imaging is used by:

- retail chains to automate ordering, credit and employment application processes;
- newspapers to access images and multimedia information, such as photographs; and
- utility companies to track nuclear plant drawings and other critical documentation.

According to The Association for Imaging and Information Management (AIIM), document imaging will be a \$3.7 billion market by 1996, with an anticipated compounded annual growth rate of 28 percent. Even more bullish is International Data Corp. (IDC; Framingham, Mass.), which estimates that the total new sales of imaging systems for 1992 was \$1.8 billion, forecasted to grow to \$5.8 billion in 1997.

Open, Affordable And Understandable

"IMAGING WAS PORTRAYED as a cure-all to imaginary or real ills. It was very expensive and out of reach to most of corporate America, except for medical records and claims processing," said Adam Thier, manager of corporate marketing at Computron Technologies Corp. (Rutherford, N.J.), a provider of imaging and workflow management software.

IMAGING: PRESCRIPTION FOR SUCCESS

Marion Merrell Dow (Kansas City, Mo.), an international pharmaceutical company needed a more efficient and cost-effective way to manage the paper-intensive process of clinical research and drug development. Because the company's clinical research laboratories must keep accurate track of the actual patient data collected during clinical trials, Marion Merrell Dow was processing hundreds of thousands of multiforms annually.

After conducting an internal needs-analysis study, the company was determined to re-engineer the workflow process of handling clinical data. An additional cost-benefits study indicated that implementation of an imaging system would improve efficiency and save money.

"We needed to reduce the costs of distributing multiple paper copies to different sites around the world and expect payback within one and a half years," said Project Manager Ken Wilcox. "We selected imaging because it emerged as the best technical solution to meet the requirements of the redesign process." Additionally, imaging will help reduce the cycle time for development and approval of pharmaceuticals and increase productivity.

Merrell Dow recently purchased FileNet's WorkFlo and image management software for use on HP computers at sites in Canada, the United States, England and France. The system, built on an Oracle database, running on an HP 9000/800 with an HP optical disk library and a DEC database server when implemented, will support over 300 users. The system will be used for managing clinical data and accessing case report forms via images. The first rollout is currently being implemented in Laval, Canada.

This view has done a one-eighty as imaging has become more understandable, according to Thier. One reason is that imaging files are now defined as just another datatype and can run on PCs, rather than specialized equipment. Also, more organizations across the board recognize the competitive advantages that imaging provides.

Low-end imaging in the form of PC-compatible scanners has been around for some time, but now there also are affordable PC-based imaging solutions available for client-server workgroups. "People are trying to bring applications to the desktop and there will be an explosion because of applications such as imaging and multimedia," explains Ted Case, president of MediaMagic (Richardson, Texas), which provides full motion video for HP workstations. "I see the market moving from the early believers to where applications are now starting to impact businesses and end-user productivity."

Computron's Computer Output On-Line (COOL) provides online computer access to text reports which have traditionally been printed to microfiche or paper for archival storage. COOL is database-independent and uses Acucobol for vision indexing, which dramatically reduces storage requirements because the ASCII format does not require storage in a complex database structure. Developed on the HP 9000, COOL supports Windows NT and runs under all the major GUIs, including Microsoft Windows 3.1, OS/2 Presentation Manager, OSF Motif, OpenLook and Macintosh.

Lotus Development Corp. (Cambridge, Mass.) offers imaging software for Notes, its workgroup software product. The Lotus Notes Document Imaging (LNDI) Image Viewer enables Notes' users to exchange and manipulate images. The LNDI Image Mass Storage Subsystem manages large image databases and image storage across a network.

Keyfile Corp. (Nashua, N.H.) offers Keyfile, a Windows-based integrated document management software that files, retrieves, shares, distributes and automates electronic- and paper-based documents at the departmental and enterprise-wide levels. Keyfile's "ad hoc" workflow allows users to automate the manual process of routing documents among users, with the flexibility to change the workflow at any stage.

Changing The Workflow

"IMAGING AND WORKFLOW [technologies] are mission-critical," said Jan Kerrick, strategic marketing manager for Imaging and Document Management in HP's Workstation Group, which has developed partnerships with many third-party vendors for imaging solutions and services. "We see a real need for customers to manage documents as they downsize."

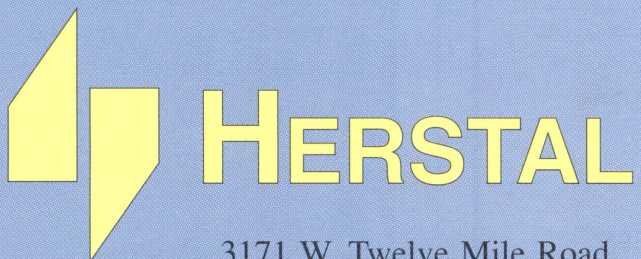
A variety of solutions are available for customers who need to re-organize their business processes in order to conform with ISO 9000 quality standards or other corporate directives. Companies that offer imaging and workflow system software for the HP platform include Computron Technologies Corp., FileNet Corp. (Costa Mesa, Calif.), Recognition International (Dallas,



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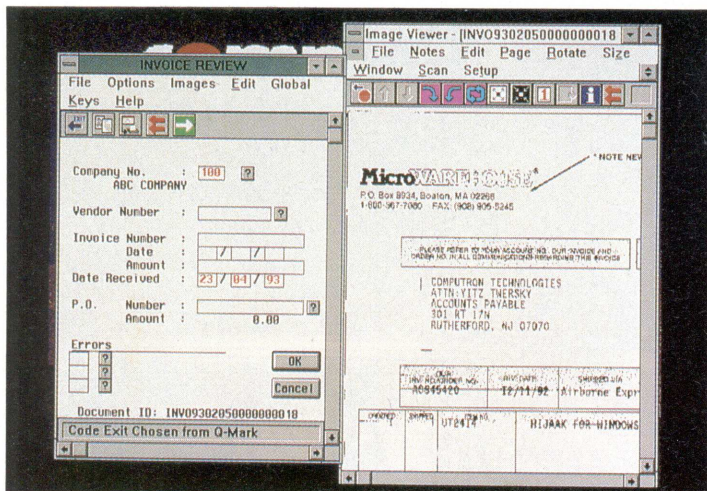
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EPIC, Computron's workflow system, automatically displaces program and data information to a user.

Texas), Sietec Open Systems (Willowdale, Ontario) and Wang Laboratories (Lowell, Mass.).

FileNet's Workflow Business System is a set of products that allows users to create highly scalable, mission-critical client-server applications for automating or re-engineering an organization's paper-driven workflow. The product suite ranges from Image Management Services (IMS) software that runs on

UNIX servers, to WorkForce Desktop software, a suite of document imaging and WorkFlo products for PC workstations. IMS, which runs on HP 9000/800 systems, consists of a comprehensive set of application modules that control the processing, storage, retrieval and printing of document images. IMS will be available for the HP 3000 platform.

Recognition Software Division, formerly Plexus Software Division, offers several workflow, compound data management, forms processing and character recognition products. Plexus CMA (Case Management Application) is an integrated imaging and workflow application for managing case or file-folder-based data and documents. It can be customized to various vertical market applications, such as healthcare claims processing, insurance underwriting or mortgage loan processing.

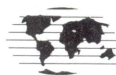
Wang's OPEN/image allows users to add imaging to their new or existing applications. OPEN/image can scan a hard copy document to create an image document, copy an image document, display image documents within a workstation window, send and receive images electronically, print an image document, verify image documents for status, and format, and fax image documents. Users also can work with grayscale and color images, using Wang's Microsoft Windows-based user interface. Wang's OPEN/image Application Image Enabling Services for HP MPE/iX consist of an API and OPEN/image WorkStation

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for MPE. It's supported on HP 9000/800 and HP 3000 MPE platforms, as well as on LAN-based PCs.

Technical document information management systems suit the needs of organizations with engineering and technical requirements. Companies that offer such systems for the HP platform include AUDRE (San Diego, Calif.), CACI Gateways Inc. (Arlington, Va.), Cimage Corp. (Ann Arbor, Mich.), Formtek (Pittsburgh, Pa.) and Novacad Technical Information (Burlington, Mass.).

Large manufacturing and engineering organizations can take advantage of Formtek's enterprise-wide information and work process management system to improve efficiency and achieve maximum benefit from streamlined business processes. FORMTEK:TDM manages objects, such as CAD models, image, text, folders, MRP data, hardcopy documents and multiple-page specifications. It supports HP 9000/700 workstations running HP-UX 8.0.5 and higher, PCs running DOS and Windows, as well as a variety of other UNIX platforms.

Products that combine text retrieval with document image management represent another product category available for the HP platform. For example, Excalibur Technologies Corp.'s (San Diego, Calif.) Pix/EFS document imaging software allows users to collect text and images from multiple sources and automatically index and file this information in a GUI replica of a physical file room. The company also provides the XRS multimedia information retrieval software developer's toolkit, the

first software designed to manage the storage and retrieval of multimedia data, including text, image, video and signal data.

Here A Database, There A Database

AS PART OF THIS CHANGING workflow process, more and more organizations are using RDBMSs over a client-server network to access information from company sites around the world. Therefore, the capability to access data from large corporate databases has become an increasingly important requirement.

"With workflow technology, there has occurred a shift from the departmental use of imaging to enterprise requirements with 2,000 to 5,000 seats over a wide area network," said Dean Cruse, director of strategic marketing at Recognition International. He said that businesses, particularly Fortune 1000 companies, want imaging because it is a proven technology that can provide a competitive advantage.

"The most important issue today is environmental independence, including the need to work with different databases," said Cruse. "Traditionally, we have addressed the more production-oriented systems with the need for structured applications, such as insurance claims and tax processing. However, there has been a movement from the early technology adopters. Now we are seeing that the need for imaging is spread out

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Recognition's Plexus XDP software is a software toolset and RDBMS which provides document imaging functionality on LAN-based hardware platforms, including an HP 9000/800 server. It supports industry-standard operating environments, and allows programmers to design complex data process applications that integrate document capture, processing and retrieval, as well as mainframe connectivity. It supports the Informix (Menlo Park, Calif.) relational database, with plans to support Oracle (Redwood Shores, Calif.) clients in the near future.

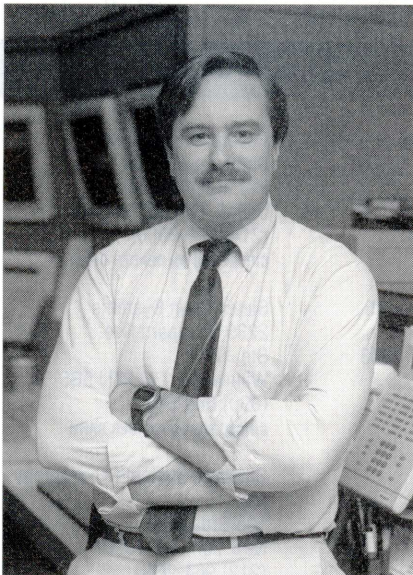
Informix has developed a set of tools to access and store images and other binary large objects (BLOBs) as part of the relational database. INFORMIX-Online is an online transaction processing (OLTP) database server that can capture, store, process and retrieve all types of multimedia information, including technical drawings, photographs, printed documents and video. Users can store up to 2 GB of image data as a field in a database record.

While the demand for imaging has become more widespread, organizations must be realistic about their budget and expectations. Generally, that involves a needs analysis, which

may actually change over time as company requirements evolve. "Cost justification should be the first step in evaluating an imaging system" explained Steve Fontana, director of imaging technology at Software Systems Technology (New York, N.Y.), who said that often prospective buyers have an unrealistic view of imaging cost and capabilities. He emphasized that before investigating in an imaging solution, companies should obtain management and end-user commitment.

As imaging becomes part of the landscape of corporate America, businesses will need to find new ways to maximize productivity from their existing solutions. "One of the major trends that we expect to see in the imaging industry over the next five years is a strong emphasis on services," said Gerry Murray, research analyst of Image and Workflow Systems at IDC. "We expect to see services make up nearly 50 percent of revenues in 1997." —Paula Jacobs is a marketing consultant and writer based in Framingham, Massachusetts. She can be reached at pjacobs@world.std.com.

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Its Debut In Business Applications



According to most industry analysts, multimedia is one of the most promising growth areas in the computer industry. Sure, sure, you've heard it all before. Thrown about with reckless abandon by both mavens and marketeers, multimedia is a term that encompasses virtually everything from CD-ROMs to CNN. But after several years of existing as nothing more than a pastiche of overheated and overhyped technologies, multimedia, in all its permutations, may finally be getting ready to become a star in prime time.

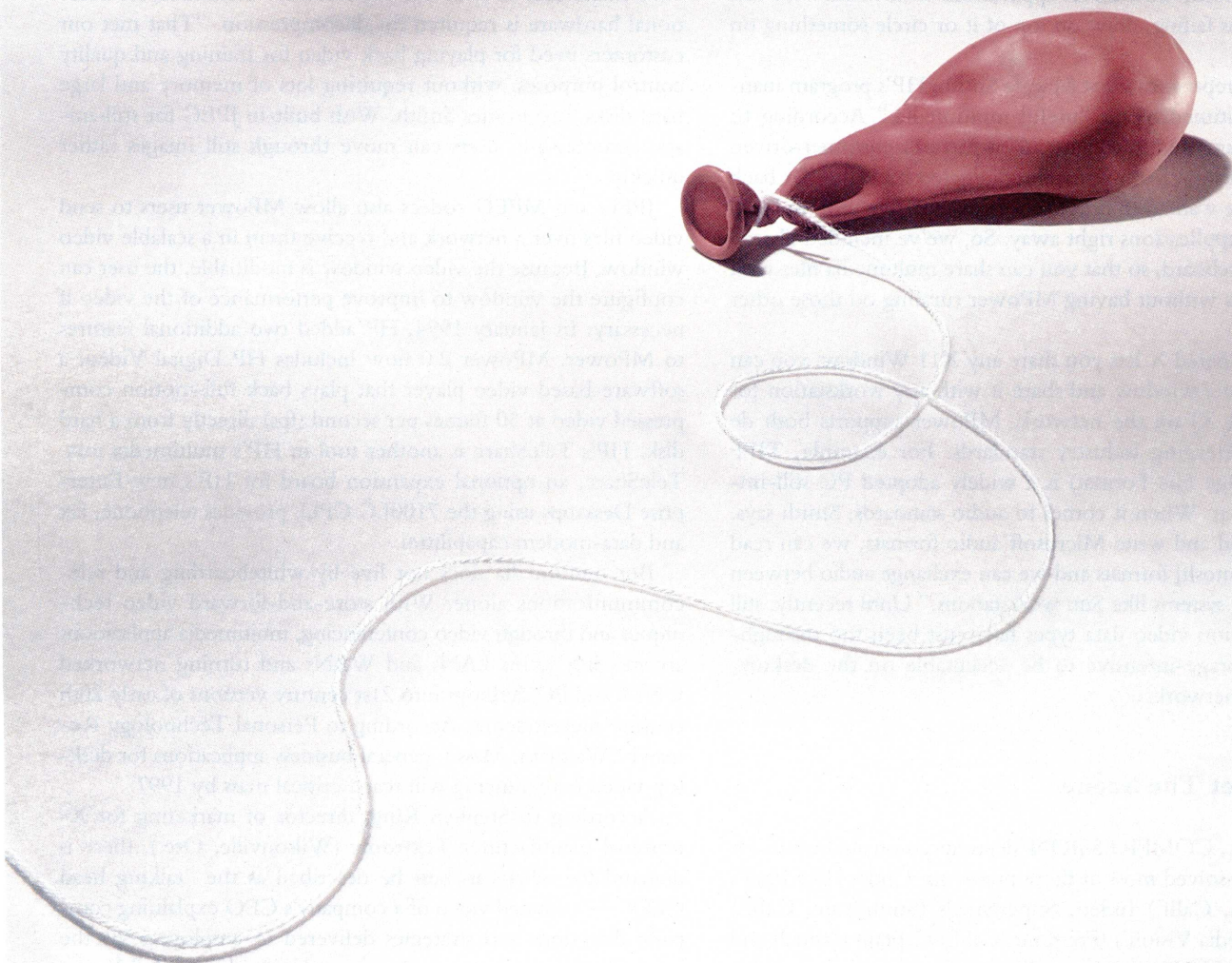
It's true, multimedia applications — those using combinations of text, graphics, imaging, audio or video — are now being effectively used for in-house corporate training, desktop video publishing, voice-annotated mail, document imaging and

corporate presentations. Potential uses include online reference services, as well as distance learning. In fact, a survey by the Business Research Group, (Newton, Mass.), found that many multimedia applications already take advantage of voice and video, that multimedia will become an integral part of client-server networks and that multimedia has improved business productivity.

For example, Dan Ganousis, director of ASIC technology at Mentor Graphics (Wilsonville, Ore.), is using MPower, HP's multimedia software, to link 21 of his colleagues in a tightly-knit workgroup. Ganousis is fond of MPower because "rather than buying workstations for the engineers and Macs for the marcom people, I have a single hardware platform."

Ganousis' group does consulting work that resolves ques-

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tions and problems from remote sites, so he also gets a collaborative bang for his buck by taking advantage of MPower's fax and whiteboard capabilities. Instead of sending reports and digital audio tape back to corporate headquarters via overnight express couriers, Ganousis now shares applications with them. "We can all see what is failing, draw on top of it or circle something on the screen."

MPower represents what Maggie Smith, HP's program manager for multimedia calls "useful multimedia." According to Smith, "making multimedia useful" is part of a customer-driven strategy stemming from research conducted by HP as far back as 1989. "We wanted to provide the collaborative tools to build multimedia applications right away. So, we've included Shared X and a whiteboard, so that you can share multimedia files with other systems without having MPower running on those other systems."

Because Shared X lets you share any X11 Window, you can use it to grab a window and share it with any workstation [or PCs running X] on the network. MPower supports both de facto and emerging industry standards. For example, TIFF (Tagged Image File Format) is a widely adopted PC still-image file format. When it comes to audio standards, Smith says, "We can read and write Microsoft audio formats, we can read Apple [Macintosh] formats and we can exchange audio between other UNIX systems like Sun workstations." Until recently, still and full-motion video data types have just been too throughput- and storage-intensive to be acceptable on the desktop, much less a network.

Codecs Set The Scene

HOWEVER, COMPRESSION/decompression algorithms (or codecs) have solved most of those problems. Codecs like Intel's (Santa Clara, Calif.) Indeo, SuperMac's (Sunnyvale, Calif.) Cinepak, Media Vision's (Fremont, Calif.) Captain Crunch and the CCITT's H.261 (Px64) are all vying for acceptance as video playback, videoconferencing and CD-ROM standards. However, JPEG and MPEG are two codecs that are emerging as standards. Both JPEG and MPEG are supported by MPower.

JPEG is a well-known and established codec. With JPEG, every video frame is compressed and transmitted individually, allowing for easy editing of video sequences and limiting potential data losses over networks. As a symmetrical algorithm, JPEG compression and decompression takes the same amount of time and CPU power, an important feature for video teleconferencing.

MPEG (Motion Picture Experts Group) is a "lossy" algorithm that first compresses a still image, then sends only the incremental changes. But determining the differences in images is compute intensive. Because there's very little difference in content from frame to frame in a video sequence, MPEG can achieve a 200 to 1 compression ratio (compared to JPEG's 40 to 1 compression ratio), so it's considered one of the most economical compression schemes.

Because HP expects MPEG to become a durable standard, MPEG and JPEG instructions are integrated into HP's new 7100LC CPU. "We adopted MPEG because it's a better way to compress video and transfer it around a network," says Smith. "We make calls to it in our application." Therefore, no additional hardware is required for decompression. "That met our customers need for playing back video for training and quality control purposes, without requiring lots of memory and large hard disks," continues Smith. With built-in JPEG for still-image compression, users can move through still images rather quickly.

JPEG and MPEG codecs also allow MPower users to send video files over a network and receive them in a scalable video window. Because the video window is modifiable, the user can configure the window to improve performance of the video if necessary. In January 1994, HP added two additional features to MPower. MPower 2.0 now includes HP Digital Video, a software-based video player that plays back full-motion compressed video at 30 frames per second (fps) directly from a hard disk. HP's TeleShare is another tool in HP's multimedia mix. TeleShare, an optional expansion board for HP's new Enterprise Desktops using the 7100LC CPU, provides telephone, fax and data-modem capabilities.

But multimedia does not live by whiteboarding and telecommunications alone. With store-and-forward video techniques and through video conferencing, multimedia applications are moving across LANs and WANs and turning networked UNIX and PC desktops into 21st century versions of early 20th century nickelodeons. According to Personal Technology Research (Waltham, Mass.), general business applications for desktop video conferencing will reach critical mass by 1997.

According to Stephen King, director of marketing for X-terminal manufacturer Tektronix (Wilsonville, Ore.), there is demand for what can best be described as the "talking head CEO" — a canned video of a company's CEO explaining company directions and strategies delivered to employees via the network. King, of course, points out that "video-ready" X-terminals are perfectly suited for that kind of applications.

Companies supporting HP in video and video conferencing endeavors include MediaMagic (Richardson, Texas), Parallax Graphics (Santa Clara, Calif.) and InSoft Corp. (Mechanicsburg, Pa.). EISA-based boards from MediaMagic and Parallax compress "video in hardware so you get good performance, while InSoft supplies the necessary video conference management," explains Smith.

MPower 2.0 fits uniquely into HP's microprocessor architecture," says Lee Caswell, director of marketing for Parallax Graphics, who thinks a close cooperation between hardware and software is necessary for making multimedia successful. Already quite successful on Sun workstations, Parallax introduced four new HP-specific products designed for HP 9000 Series 700 workstations in March 1994.

Parallax's PowerVideo 700 Series of video products are EISA-based boards providing full-screen size (640 x 480) and full-motion, 24-bit video that can be used in the MPower en-

vironment. It is based on Parallax's three-year-old ASIC-based VideoStream technology, which is built on standard Xt wid-gets.

Striking Up the Bandwidth

SAMPLED VIDEO SIGNALS require much higher bit rates, ranging from 10 Mb per second (the maximum bandwidth for Ethernet) for broadcast-quality video to more than 100 Mb per second for HDTV signals. A network must be able to guarantee the bandwidth needed by the video signal. InSoft Corp.'s Communique! provides the continuity necessary to maintain the integrity of a video stream. Like MPower, Communique! provides collaborative workgroup tools like a full whiteboard and "writeboard," but also provides the ability for video conferencing across multiple LANs and WANs. Communique! also is compression independent. For those with networked PCs, a Microsoft Windows version is expected this summer. It will require a 486- or Pentium-based PC.

Communique! has been available for HP 9000 Series 700 workstation since July 1993. According to Keith Wimberly, marketing director at InSoft, with the new Parallax products

offering high-quality video for HP workstations, "we're ramping up for demand in the HP channel." He cites HP's strength in the engineering market and its successful entry into the financial, telecommunications and utilities arenas.

"We see MPower as a complementary product that can live in the same environment," says Wimberly. Whereas other video conferencing solutions like Silicon Graphics' (Mountain View, Calif.) InPerson and Sun Microsystems' (Mountain View, Calif.) ShowMe are vendor-specific, Communique! is built on InSoft's Digital Video Everywhere (DVE), an open software architecture being developed by the company. Consequently, "we are interoperable with HP, Sun, IBM and DEC platforms, as well as various network topologies like ATM, Frame Relay, Ethernet and ISDN," explains Wimberly.

Getting In On The Act

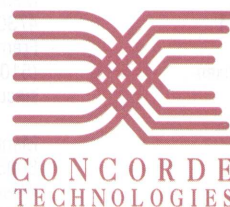
WHILE IT STIRS UP compelling visions of videophones and interactive TV, multimedia technologies are still closer to the age of Fred Flintstone than George Jetson. Wimberly cautions there are still problems like network infrastructure and how to handle distributed video on production networks. Most appli-

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cations, like video mail and training videos, use store-and-forward techniques, which is less bandwidth-intensive than real-time, full-motion video conferencing.

A NetWare Loadable Module (NLM) from Fluent Inc. (Natick, Mass.) adds synchronizing services to NetWare. Even Novell (Provo, Utah) has introduced NetWare Video 1.0, a NLM providing digital video and audio synchronizing services for NetWare networks. Starlight Networks Inc. (Mountain View, Calif.) has developed StarWorks, an enterprise network to accommodate digital full-motion video.

Switched Ethernet, isochronous Ethernet and ISDN are all contenders to push video around various network topologies. ATM, developed by the CCITT, supports voice, data, image and video signals in flexible multiplexing networks.

Intel is hoping that its ISDN-based ProShare video conferencing (at only 15 fps) and document sharing product will become a standard while turning the PC into a desktop communications device. Intel recently helped form the Personal Conferencing WorkGroup to help its efforts. A specification is expected to be released by midyear. On the other hand, AOX Inc. (Waltham, Mass.) is scheduled to introduce a video conferencing product that runs over non-ISDN lines.

Vendors like Oracle Systems (Redwood Shores, Calif.) and Cincom Systems (Cincinnati, Ohio) also are creating multimedia-compatible, distributed databases, such as Oracle's Media Server and Cincom's Multimedia Workbench for Supra Server. Sybase (Emeryville, Calif.) also recently announced GainMomentum 2.0, a new release of its object-oriented, multimedia application development environment. And for those with an auctorial bent, products like AimTech Corp.'s (Nashua, N.H.) IconAuthor, provides an interactive multimedia authoring tool. Both GainMomentum and IconAuthor run on HP-UX.

Yet, when it comes to multimedia, whether you're collaborating on the desktop or watching CNN, seeing is believing, or so they say. By some estimates, we only retain 20 percent of what read and only 40 percent of what we hear, but up to 75 percent of *what we see and hear*. Digital full-motion video now represents the ultimate digitization of all data types inherent in the meaning of multimedia. Its soon-to-be ubiquitous availability via networks marks its democratization as it brings the familiar intimacy of television to corporate desktops.

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Haute

TECH

Now more than ever, thanks to relatively rapid improvements in computers, you are in control of your own computing environment. You choose how that system will function and how easy or difficult it will be to use. In order to help make those choices easier to understand, let's review a few of the latest hardware selections available this season, a high-tech fashion show of sorts.

The one company all eyes are watching this season is Hewlett-Packard. HP finally has an entry-level PA-RISC UNIX workstation with a price under \$4,000 for a system with a color top, enough RAM (16 MB), plenty of processing power for many applications and multimedia to boot. Performance sits within striking distance of the DEC Alpha systems for a lot less money, while outrunning all other comers at press time on both performance and price.

HP's 9000 Model 712/60 workstation comes from the factory with a 60 MHz clock speed, performance of 58 SPECint92 and 79 SPECfp92, along with 1.1 million X11 vectors per second graphics performance. The entry level system includes a

15-inch color, yes color, monitor, 16 MB RAM, a 260 MB disk drive and a one-year on-site warranty, for \$3,995.

HP's 9000 Model 712/80i has a name that sounds vaguely like a fuel-injected BMW, but is in fact the somewhat heftier version of the system above. It's a 80 MHz screamer, with performance of 84 SPECint92 and 79 SPECfp92, along with 1.4 million X11 vectors per second graphics performance. This system includes a 17-inch color monitor, 16 MB of RAM, a 260 MB disk and a one-year on-site warranty, for \$8,820.

OK, the stats are impressive, but the real news is the fact that HP seems to be able to stay competitive in the computer hardware markets, and can be expected to keep pace rather nicely over the near term anyway. However, that's not to say, Sun or somebody else won't eclipse the numbers within a month or two, at least temporarily.

More than just numbers have changed for HP. What I noticed was a different attitude on HP's part about their competition. In the past, HP didn't seem to take PCs all that seriously, but Pentium and the IBM/Apple/Motorola PowerPC chips ended that.

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"This is a simultaneous collision of low-cost PCs now moving up to greater capability with Pentium and PowerPC, and running new operating systems," says Janet Muto, commercial program manager for HP's Workstations Systems Group (Chelmsford, Mass.) "At the same time, UNIX workstations are now able to sell at lower prices and viably handle PC productivity tools and applications." In other words, the convergence of the PC and workstation worlds we've been hearing about for a couple of years is finally happening.

Muto adds, "PCs are still dropping, but the difference in price is not that great. Users are finding out that in networked environments, the cost differences are negligible. Now we're working harder to spell out where our different desktops make sense, because we make all of them."

HP now supplies HP Entria X-stations for less than \$1,000, HP 712/60 UNIX workstations for less than \$4,000 and servers for not much more. All are PA-RISC-based and competitive or better in price and performance. And if you prefer HP's proprietary 3000 systems, HP just added a new line of those, with similarly low prices.

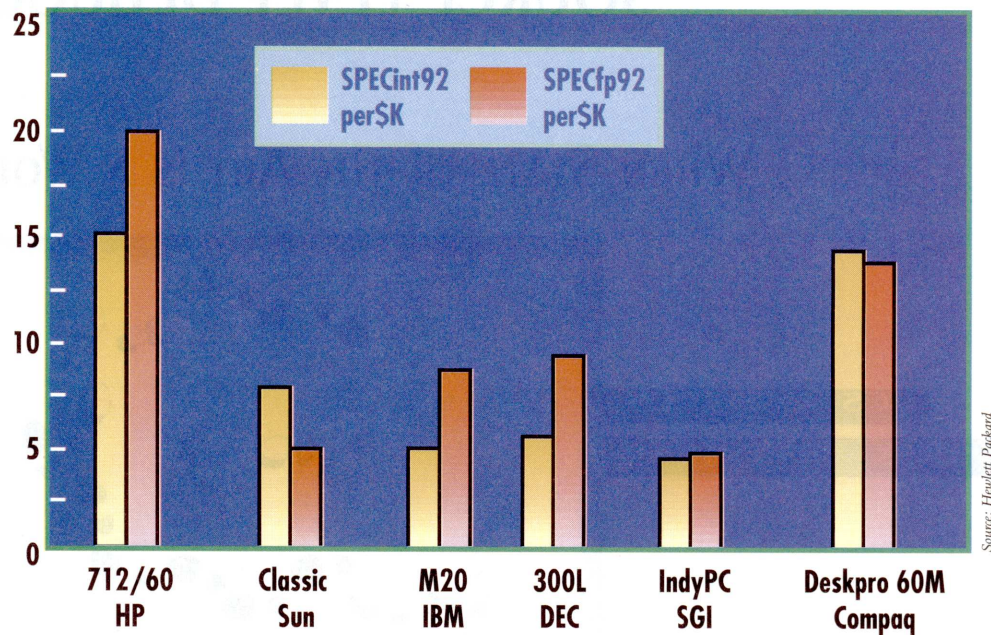
Oh, and servers are popular again this year. HP has a family of low-end PA-RISC-based servers starting at \$5,969 for an HP 9000 Series 800 Model E25. This system, based on the PA7100LC processor, has OLTP performance of 80 transactions per second (tps). Up one level, the E35 has 125-tps performance for a base price of \$8,319, while the E45 has 155-tps performance for a base price of \$11,319. Oh, yes, if you have to have your Pentium and HP too, you can do that as well — HP has its own line of Vectra PCs.

What Else Is In Vogue?

SALES OF REGULAR OLD Intel PCs, combined with emerging Intel Pentium systems, will grow to about 9 million units per year by 1997, according to International Data Corp. (IDC; Framingham, Mass.). Nothing else on the desktop is in the same league with these sales numbers. MS-DOS, hardly the Beau Brummel of operating systems is nevertheless still the rage. This PC version of grunge may well remain in style for quite awhile, despite the latest reviews. Of course, there's no accounting for taste. Costs for a single user system range from under \$1,000 for a stripped-down 486 to \$5,000 and up for a Pentium-based system.

Pentium systems are starting to become widely available, but

Entry Color Price/Performance



Source: Hewlett Packard

remain on the pricey end, typically exceeding the cost of entry-level UNIX workstations. And just to further confuse today's buyers, Intel also provides a triple-speed DX4 chip that can outrun some Pentium systems for an entry-level price of about \$2,000. But of course, faster chips are always coming down the runway.

IBM (Armonk, N.Y.), Apple (Cupertino, Calif.) and Motorola (Schaumburg, Ill.) teamed up to design the PowerPC. Will there be enough price performance advantage to compete with Intel PCs? And can these low-end machines compete effectively with UNIX systems? Well, it may bring Pentium-like power at less cost than the high-end Intel PCs, but we'll have to see what it wears on the street before we know for sure. As always with new architectures, providing operating systems and application software are huge hurdles to overcome.

In any case, analysts expect growth to be slow going for these untested systems in the near future. Estimates of 1994 PowerPC shipments run to perhaps 2 million units. That would take some business away from RISC workstation vendors, but won't likely slow down Intel, which expects to sell 7 million Pentium chips this year. And Sun Microsystems' (Mountain View, Calif.) SPARC-based systems are expected to undergo a long-overdue revamp by about the time you read this.

Long the performance leader, Sun has been taking it on the chin from just about everybody for a while now. It has been fighting back on price/performance where it used to have superior raw performance — but hey, you can afford to do that for a while when you've got a large installed base sporting your design.

Silicon Graphics (SGI; Mountain View, Calif.) continues to turn out some fine graphics workstations, duking it out with HP in the graphics workstation business to see who can make pretty pic-

tures for the smallest price tag. HP may have the edge at the moment, as SGI systems with a hard disk start at \$5,995. However, SGI's Indigo models continue to do well in the technical market.

Digital Equipment Corp.'s (DEC; Maynard, Mass.) Alpha workstations, while they look pretty good in the catalog, don't seem to be bringing in droves of buyers, perhaps because the new architecture has been slow to lure software vendors on board. Alpha AXP 300 systems are the current low end, but not low enough in cost just yet. DEC is likely to address that this year, and continues to fan the flames of hype. But DEC is losing ground and big money in the market. IBM is lurking around back stage, waiting for the new PowerPC models to replace the fading beauty of its older RS/6000 workstations. Of course, getting others to use their chips is a key part of their strategy.

That's the latest for this fashion season. Some traditional favorites and a lot of hot nouveau models. Just remember, everybody always looks better on the runway.

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Let The **CHIPS FALL**

While computers grab the big-time press and get your attention, elsewhere in quiet factories, in lands not faraway, chip foundries are churning out chips and earning profits that support the razzle-dazzle, sexy front-page histrionics we read about.

Intel (Santa Clara, Calif.) last year garnered \$7.8 billion in revenues. With less publicity, Motorola surpassed \$6 billion in chip revenue last year. Many of these products aren't computers, but common technologies such as washing machines and aircraft that use embedded controllers. These no-name products often live long, profitable lives.

When HP set up its Precision RISC Organization (PRO) consortium, the intent was to quietly expand the range of applications for PA-RISC chips. It was to include PA-RISC systems from other vendors, but also to aggressively move into the embedded controller market.

Hitachi Semiconductor (Brisbane, Calif.) announced the PA/50 line of low-power microprocessors for entry-level workstations and high-end embedded controllers. By repackaging HP technology to omit some high-end functions and increase power efficiency, Hitachi has devised a product with somewhat less capability, designed for systems with lower cost and reduced power consumption. The per-chip cost is probably in the \$100 range.

In December 1993, HP introduced the PA-7150 CPU and a new, low-cost PA-7100LC CPU. Applications for these chips will include not only low-end workstations, but laptops and portables, says Larry Inman, Technology Marketing manager for HP's Computer Systems Organization. For instance, an interesting application would be in HP's Omnibook subportable, but Inman would not comment on this possibility. Hitachi al-

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Hewlett-Packard requires that every time you need to restructure an "attached" database, you must detach it from its DBEnvironment before it is restructured. This is impractical for the majority of your production databases!

The problem is that, when the database is DETACHED, all of the mapping and user information which you so painstakingly entered during the attachment phase is "dropped".

HP permits you to log these commands to a file which you may use as an XEQ file during a future re-attachment. Unfortunately, this DBE log file constitutes a security risk because it is not privileged and contains information on user names and user DBOPEN passwords. You must retain this "leaky" file between database transformations. Your window of vulnerability regarding security and privacy will exist for as long as you retain this file in your system.

Consequently, you are in a double bind:

- 1) if you haven't kept the DBE log file, you will have to perform the attachment steps all over again;
- 2) if you have kept the DBE log file (with the security risk this implies), you may perform this re-attachment by running IMAGESQL.PUB.SYS and using the log file as an XEQ file.

(Nevertheless, even this may not be totally successful. For example, if during the restructuring you changed IMAGE passwords, you will need to edit the log file before using it as an XEQ file.)

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ready markets workstations and color laptops based on this chip in Japan. Inman says they can be expected to export these products soon. He also helps set up relationships with other vendors to develop and use HP PA-RISC chips in their products.

Winbound Electronics (Hsinchu, Taiwan) has announced its W89K embedded controller based on PA-RISC technology, with both 33 MHz and 66 MHz versions. This is a PA-RISC variant with an Intel-like pinout. While the chip still uses the PA-RISC operating systems and binaries, it allows hardware integrators to take advantage of a high-quality chip coupled with inexpensive PC-market components from the Taiwan clone market.

With a cost of \$50 per unit, these chips are likely to find their way into X-terminals, printers, fax machines, copiers and other low-end computing devices. Expect other announcements soon on new tools to help product developers take advantage of these chips.

At the low end of the PRO line, OKI Semiconductor (Sunnyvale, Calif.) announced its OP32/50N chip, which delivers 39 MIPS at a clock rate of 33 MHz. By stripping away more functionality and integrating DMA and DRAM controller functions on the chip, OKI makes a fast RISC chip for perhaps \$25 per copy. Applications, says Inman, include printers, X-terminals and fax machines, as well as telecommunications switches, routers, automotive diagnostics and engine controllers.

You might not expect a user to care much about chip applications that are unlikely to land on their desk anytime soon, or perhaps never, but Blayne Maring, system vice president for architecture with GTE Telephone Operations (Las Colinas, Texas), sounds enthusiastic about HP's plans and its PRO partners.

"PRO seems like a plus to me," says Maring. "The more chip volume that HP sees, the lower their manufacturing costs will be. And the lower their costs are, the better their product prices will be. It's in our interest to see HP get more of the market."

He continues, "Although we are currently deploying a lot of HP systems, competition in open systems helps us get the best price/performance. That's evident with HP's latest announcement. \$3,995 is a pretty nice price for a workstation."

Extending the PRO relationships will help support lower system prices by broadening the base of HP's technology and perhaps greatly increasing the total chip volumes produced. And where chips using HP technology are produced by other vendors, royalties support HP's efforts.

Inman notes that HP already goes to considerable lengths to get as much leverage as possible from its integrated circuit processes. "Today, we make PA-RISC on the same lines and processes that produce ASIC chips for LaserJet and DeskJet printers. These are very full process lines that are heavily used by all our high-volume consumer products." That is the kind of leverage that cuts HP's costs and enables the company to compete effectively in the ferocious computer market of the '90s. PRO may make much more of this technological leverage possible over the next several years.

Inman states that in order to develop an architecture that will survive over the long haul, HP must produce a strong ar-

chitecture and maintain control over it. In addition it must generate large numbers of chip applications. According to Inman, HP must develop first-rate compilers, particularly back-end compilers, as well as evolve low-cost and flexible, but reliable IC processes. Finally Inman states, HP needs to maintain top-flight system design around chip technology (typical HP simulations include not just the chip, but the entire processor board, for instance, to maximize optimization of off-chip devices).

While most of HP's competitors fall short in one or more of these areas, HP has not yet been successful in generating a large enough number of chip applications to break out of the image of a vendor designing chips to meet its own customer needs, much like Digital with its VAX or Alpha chips.

There is no question where HP is trying to go. It wants to be another major chip vendor, supplying chips to other large computer and electronics firms, with simultaneous systems, software, system integration and support arms as well — something, which to date, no computer or chip maker has managed to accomplish.

"HP has to head in that direction," says GTE's Maring. "That is what the industry is going to look like." And along the way, HP's success rides on its ability to supply consistently top-quality chips with some of the best price/performance in the market. No matter what computing products you use, improved competitiveness inevitably works in your favor.

Staying power in the computer market over the long term requires more than good computers. As both DEC and IBM have discovered, computer lines tend to become too focused in one segment or another, which makes the company vulnerable to changing market conditions. HP's computing success thus far is due in part to great architectural design, but also in part to the company's diversity, which makes it less vulnerable to change.

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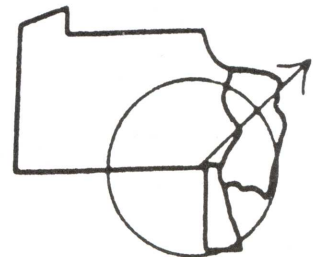
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Taming The Wild Network

The following picture is all too common: Because local area

networks can now be found in far-flung manufacturing plants and sales offices, your single Ethernet network is now a collection of Ethernet and Token Ring segments. Because of high costs to train existing employees or to hire experienced network technicians, the responsibility of keeping these remote sites working has been assigned to you. What can you use to monitor and troubleshoot remote sites? How about the recently updated HP NetMetrix 4.0.

HP NetMetrix 4.0 is fully integrated with HP OpenView and Sun's SunNet Manager network management systems. It runs on HP 9000 Series 700 and 800 systems running HP-UX 9.x, as well as Sun systems running SunOS 4.1.x and Solaris 2.x. The application fully supports and manages the LanProbe II monitors, which use SNMP (Simple Network Monitoring Protocol) and RMON (Remote Monitoring Standard for MIBs). By supporting both standards, LanProbe II is usable by any standards-based network management tool.

LanProbe II (introduced in 1991) is designed to sit quietly and gather information about physically distant LANs, or more detailed data about your local LAN. This device also signals a monitoring application, known today as HP ProbeView for HP OpenView for Windows. The

signals act as alarms, indicating that a certain threshold has been reached and that human intervention is now required.

In 1993, HP acquired Metrix Network Systems providing HP with two important technologies: Power Agents and network administrative tool sets.

Power Agents, found in software, are similar to the role that LanProbe IIs play in hardware. The network administration toolsets were originally just the Metrix applications packaged under the HP label.

Power Agents

Power Agent software resides in UNIX workstations and collects the same information as the LanProbe II. These workstations can be dedicated to run a Power Agent, or the Power Agent can be a background process. As the Power Agent collects its data, it goes a step further than the LanProbe II.

Using the power of the UNIX workstations, Power Agents also process the packets to provide extremely detailed and high-level information regarding your network traffic. Power Agents provide a full seven-layer decode of network packets, and track who is doing what to whom in the process. LanProbe II only provide decode information up to the MAC layer.

Today with HP NetMetrix 4.0 you have six updated applications that are integrated into HP OpenView and SunNet Manager; or they can run as standalone apps. The six applications are the Enterprise Utilities, the Internetwork Monitor, Load Monitor, Protocol Analyzer, Network File Server (NFS), and Traffic Generator. Each of these applications processes the data gathered from all the LanProbe IIs or from Power Agents in the

network, or uses those devices directly for specialized monitoring.

The Enterprise Utilities deliver a true enterprise view of your entire network by consolidating all the network data. With the Internetwork Monitor, you drill down to look at each piece of the network. You also combine network segments together for viewing with a goal to optimize that part of the network. The Load Monitor provides you with real-time or long-term traffic monitoring for locating bottlenecks.

The Protocol Analyzer works with the Power Agents allowing for the full decoding and filtering of network packets. The NFS monitor is where you track how well NFS is working. The traffic generator tool also uses the Power Agents, but this time to generate traffic which simulates the addition of new nodes or tests a device on a LAN segment.

Impressive Capabilities

As I looked through the literature and spoke with product managers regarding this product, I was impressed with its capabilities. However, there are a couple of limitations. HP NetMetrix and its Power Agents can only run on UNIX systems. While I accept the fact that the applications may need to run under UNIX, Power Agents should be available for DOS, Windows NT, Netware NLMs and, of course, MPE/iX.

If an HP-UX box can run a Power Agent in the background, an MPE machine should be able to do the same. Also with the power of the PC increasing and costs decreasing, it is less expensive to have a standalone DOS PC with a Power Agent, than to use a HP or Sun workstation.

Fortunately, these limitations are not especially serious because you can purchase HP NetMetrix in modules. That way you start by using LanProbe II along with the relevant modules to get a headstart on taming your network. HP NetMetrix 4.0 Power Agents have a floating license which allows you to proliferate them easily and with minimum investment across your network. With NetMetrix, you can have a single set of applications that provides detailed information on how your network functions.

Through the use of hardware-based monitoring devices such as the LanProbe

II, or software monitoring programs called Power Agents, you can gather data no matter where the LAN is physically located. You may want to stick a LanProbe II on a LAN at a small remote site to provide base-level checking. If problems occur, a Power Agent installed on a SPARC laptop could be easily shipped out for further problem diagnostics. All the data collected can then be gathered

through the LAN or a dial-up modem and reviewed by the highly trained staff at your central site. This keeps down costs, yet provides a way to keep everything running smoothly.

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Christmas In April

I know it's April, but I want to tell you about my Christmas present.

All I wanted was an HP 9000 Series 715/33. I ordered the machine in December. No, not for tax purposes. It just happened that way. The trouble started on the day the machine arrived. After the usual excitement of opening a wonderful present, the set-up work began.

Because this machine was going on my desk I decided to use the Software load that came on the disk, instead of the usual checklist (mistake number one). After booting and configuring the network services and home directories, I loaded Interleaf6 Motif. That was the only application for this host, so after logging in as myself, I fired up Ileaf6.

Could it really be this slow? Finally, several Motif pop-up error messages appeared stating "unable to expand directories." After reloading Ileaf6 and wasting another hour, I called for help. On the phone, we quickly determined that my disk file system was created with short filenames. What a bummer.

Well, I thought a quick **convertfs** execution and application reload would fix this. Because the file system was created with short filenames, the application load was no good because the pathnames of objects created were all truncated. It was not so easy and **convertfs** failed. I tried using SAM and it had errors at startup, which made me decide not to trust the OS load.

OK, OK, so I took a short cut. Back to the beginning — full OS load, application load, system configuration script run (our own home brew method), reboot. Now everything will be fine. WRONG. Now, the error message said my license was invalid. That seemed strange, because it was an evaluation license.

After much delicately phrased ancient sayings, I happened to get lucky and was able to really read the output of the date command. Correct time, correct day, wrong year. 1992 was a good year, but I decided to give 1994 a chance and corrected it.

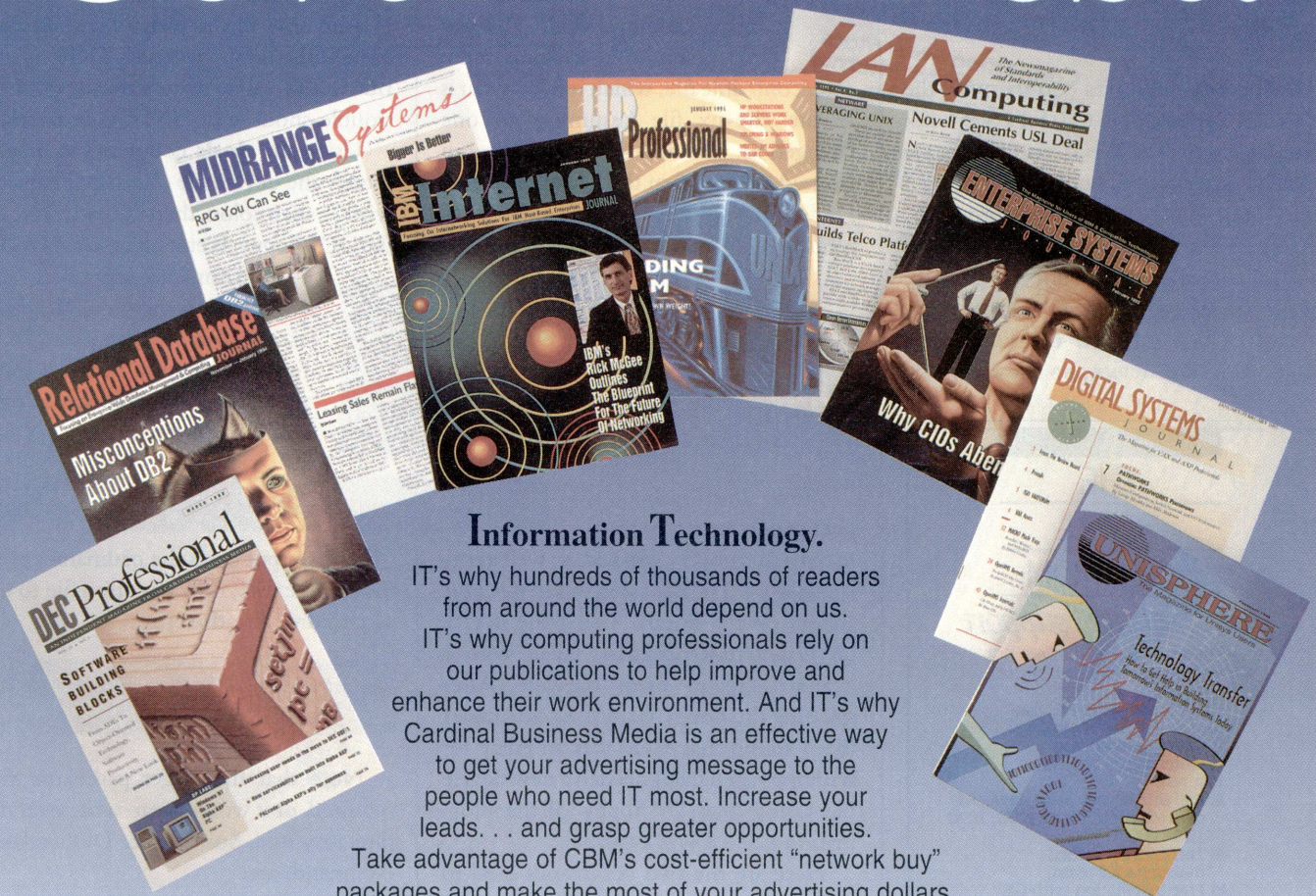
Was this a joke? It was beginning to look that way. Next time I want a hassle, I won't spend \$9,000 buying it. What is the point to all this? Do as I say; not as I did. In classes for administrators we always recommend to do your own software load and check everything before installing a new host into the network. Use a checklist of steps to ensure all is done and in the proper order. I didn't do this, and it sure wasted two days of my time that could have been prevented.

Finally the machine was loaded and installed correctly. Time to play with the goodies. We configured this machine with a 3 1/2-inch floppy, which I had never used before on an HP-UX box. First thing was to find the SCSI address, so I ran **xstm**.

The **xstm** tool is for HP's field support people, but I find it invaluable to look for devices on the SCSI bus because it shows the addresses and model numbers. It showed the removable media device at address 0. I changed it to address 1 because I didn't want address 0.

The floppy drive itself had no docu-

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mentation, so a guess seemed in order. There was only one set of three jumpers together, so I pulled one of them (all were in) which should either give me address 4 or 1. I got lucky the first time. After rebooting, **xstm** showed address 1. Because **xstm** was up, I let it run diagnostics for the device, and it failed. Using the pulldown menu's information choice, the log file showed "unable to open file" errors. Next I tried to manually execute **mediainit**.

```
mediainit /dev/r
mediainit: can't open file /dev/rdisk/c201
mediainit: can't open file /dev/rdisk/c201d1s0 - invalid argument
```

The device file was correct, with the correct major number (47) for a SCSI disk (later I discovered this is wrong). There may be other causes, but I have only seen two things cause this "invalid argument" error, assuming no spelling errors. One is a bad device file, and this one was good (in reality it was good enough, but not really correct). The other is the kernel not supporting the device, so the next step

was to see if a kernel config file entry (device driver) was needed for a SCSI floppy. Here is the command I used:

```
grep scsi /etc/conf/*.full
```

Here is the output:

```
scsi
scsidisk
scsifloppy
```

So, sure enough a device driver was needed, and because I reloaded the

OS, it was not in the kernel that had been built by default. This was shown by looking in the `/etc/conf/dfile` file, which reflects what is in the `/hp-ux` file (assuming no one changed it). The **adb** command also can be used to "look" in the kernel file itself. Here is the sequence of commands used to rebuild the kernel for use of a floppy:

```
cd /etc/conf
cp dfile dfile.original (Save original)
vi dfile (Added a new line with "scsifloppy" on it)
config dfile (Builds a new config.mk makefile)
make -f config.mk (Builds a new kernel called hp-ux)
mv /hp-ux /SYSBACKUP (Save old kernel just in case...)
mv hp-ux / (Put new kernel in place)
```

Now after a reboot to get the new kernel in place, **xstm**'s diagnostics worked, as well as my **mediainit**. The next step was to put a file system on the floppy. Using the device file, `/dev/rdisk/c201d1s0` failed with a "cannot create" error message. After **grep**ing the floppy from the `/etc/master` file, I found that there was an entry for `scsifloppy`, and that I needed a new device file. Using "man 1M floppy" all the information needed was available.

Here are the two commands used to create the proper device files. Note: I made up the filenames and did not follow convention.

```
mknode /dev/floppy/floppyblock b 23 0x201100
mknode /dev/floppy/floppychar c 106 0x201100
```

Turns out there was a floppy device file called `/dev/floppy/c201d0s0` that was built with the system load. Finally, the following command worked to create a filesystem on my floppy:

```
newfs /dev/floppy/floppychar hp770
```

The **hp770** entry is in the `/etc/disktab`

file for a .8 MB (low density) floppy. Using another entry such as **hp1386**, will create a 1.4 MB filesystem on the disk. In this case the floppy was a low density floppy, so I would have gotten a "wtfs: no space left on device" error with that disktab entry. (At this point someone should have thought: If you used SAM it would have done all this for you. If you thought this, you are correct.) Next, I mounted the floppy with these commands:

```
mkdir /floppy ; mount /dev/floppy/floppyblock /floppy
```

And now all was well. Not really. We bought the floppy to access DOS media. But it was easier to test the device and trouble-shoot with UNIX commands.

Using the **dosls** command is simple, specify the device file (block or character works), then colon, then the pathname on the DOS floppy. Remember to use UNIX style pathname separators, not DOS style, as the `\` in UNIX is an escape. After plugging in a DOS formatted floppy I copied some files onto it, the following command listed them:

```
=dosls /dev/floppy/floppyblock: (list the "root" directory)
```

The output gives the pathnames of all files on the disk, now to copy a file to the system disk, use **doscp**:

```
doscp /dev/floppy/floppyblock:/ISSUES/APRIL.TXT
/net/swift/users/fred/april.txt
```

Note that the target pathname was required, or it would try to write over the directory `fred`. Some other DOS-related commands are:

```
dos2ux ux2dos
doschmod
doscp
dosdf
dosls dosll
dosmkdir
dosrm dosrmdir
```

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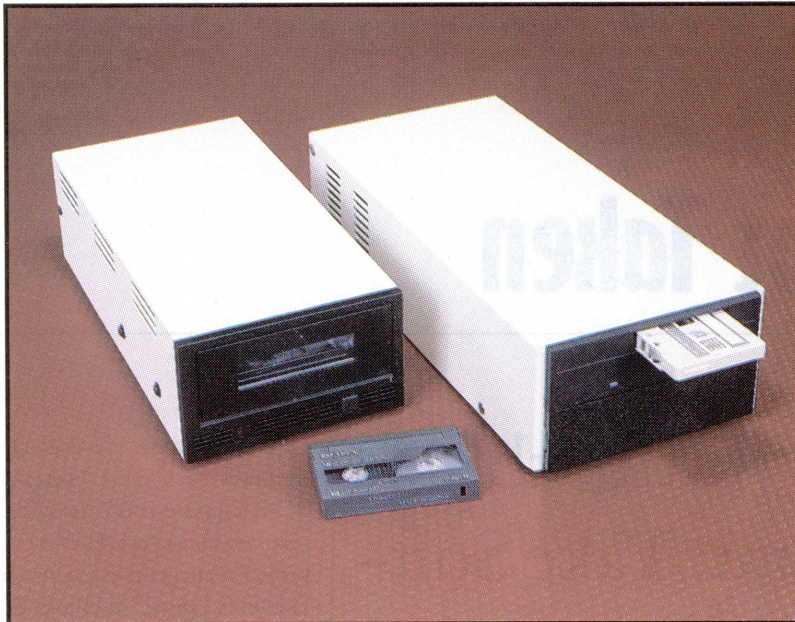
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The Road Not Taken

I t's the little things that count. Take Software Configuration

Management (SCM), for example. SCM is a set of methods and procedures that helps manage the inevitable changes in any software development effort. Ideally, SCM starts well before the first line of source code is written and continues throughout the entire system life cycle.

Moreover, the set of software configuration items (SCI) *is not restricted* to program source code, but also includes production programs, documentation, software requirements documents and a risk management plan, as well as a project plan itself. Yet it's strange that so many project managers forget to include SCM in their original software development plan.

For instance, at a recent design review, a software contractor on a Department of Defense project tried to explain to the contracting officer why a tested software system under development was working one day and not the next. The problem: faulty SCM.

For some reason, the project manager decided to "save" \$5,000 by not purchasing the automated configuration management system recommended by the contracting officer. Instead, the project team installed an ad hoc manual configuration management procedure, the effectiveness of which depended on the good faith and attention of the programmers.

Under some classical development methods, such as the "waterfall" method, SCM is ignored until the system enters the maintenance phase. However, under new project management schema, such as Barry Boehm's "spiral" method, SCM is integrated into the method. Attention to SCM can ensure that each software component is where it should be, that programmers are using the right version for maintenance, that users are executing the correct production version, and that requirement definitions are traceable throughout all versions of the software. In fact, traceability is essential in large-scale applications systems development.

On the other hand, ignoring SCM can obliterate the benefits expected from emerging software methods supporting object-oriented technology (OOD/OOP). Inadequate SCM may be one explanation for the recent popularity of the "software re-engineering" movement.

In software development organizations there is a tendency to do things manually rather than buy or build the software aids. SCM is too important to do manually.

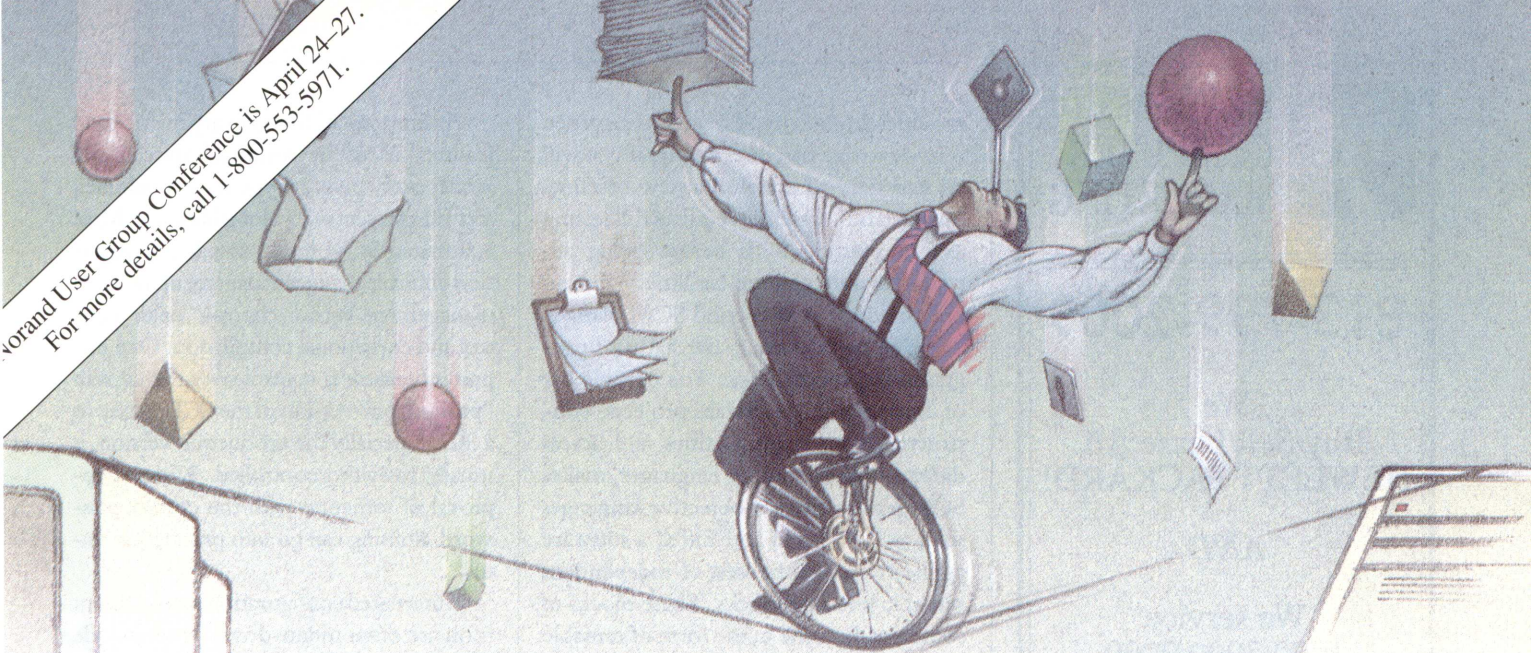
SCM Unbound

The SCM plan should be one of the earliest components of software development plan. However, for some odd reason, it is often considered as an after-thought.

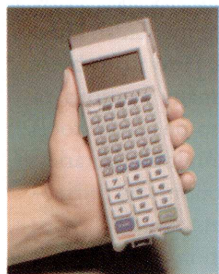
Although the actual implementation of the SCM plan can sometimes be deferred until the software components begin to be integrated into a software system. However, at that first stage of integration, the project manager should establish a baseline for all SCIs in the project.

Once a baseline is established, every

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modification of any SCI will be recorded relative to that baseline. Eventually, it will be necessary to establish a new baseline, but each new baseline requires full testing against existing SCIs before being accepted as an authentic baseline. This can only be done with a good SCM plan.

SCM helps manage the status of programming source code. The complexity of contemporary software projects, constructed from many entities and across different programming languages, makes SCM a necessity. In objective languages such as C++, Ada and Eiffel, a software application is composed of independent reusable building blocks. These blocks of source code come in the form of reusable compilation units. In procedural languages such as COBOL, Pascal and C, a developer will have libraries of source code that can be leveraged into new applications via "include" or "copy" statements.

A single project may require many programmers, each working on and reusing different modules. It is not uncommon for some modules to be written in special languages and integrated into the rest of a program through some module "interface" facility. During the lifetime of a software application, every one of these modules will be a candidate for change. Just as each change must be subjected to some form of "regression testing" its status must be controlled by the SCM function.

A good SCM program could prevent the percentage of the well-known budgetary ratio, of software maintenance to software development in typical organizations, from getting any higher. If you spend \$2 million per year on software, more than half of that is probably devoted to maintaining existing software.

Attitude Adjustment

Too often, the project manager views SCM as a bureaucratic control demanded by the software development contract. That attitude is then unconsciously transferred to the rest of the development team which reluctantly goes through the motions of SCM, while regarding it as a nuisance. Eventually, this will lead to a lot of finger-pointing and blame-throwing: "You wrote over the code in my library." "Why didn't you use the version of the code I compiled yesterday?" "What do you mean the requirements have changed?"

Automated SCM tools vary in price and features. Most are reasonably-priced and worth every penny if you have a complex software project with a long life cycle. Most automated SCM tools provide configuration control, change management, revision management, version control, "delta" control and conditional compilation. One important feature is control over the current "production" version of the SCI. Access to a SCI, especially the production version, is usually password controlled. Without approval of someone with the correct password, nothing can go into production status.

Automated configuration management tools are often menu-driven, and include a wide range of reporting capabilities — problem reporting, component tracking, change control, production release management and library statistics like: How big is the library of components? How many bytes compressed? How many bytes uncompressed? How many versions of each component? and so on. Some tools provide access across multiple libraries, but others include a taxonomy for retrieving reusable components.

All good configuration management systems include some kind of security management. For example, a traceability feature in secure systems is a source code modification audit. This feature reports exactly which lines of code have been altered from one version to another. This is useful in financial systems where state and federal auditors require thorough traceability between source code versions.

The days are past when a group of programmers are allowed to nonchalantly decide how to keep track of software components. In those days, the programmers even decided when to release a new production version of the application. If you really want to be forced to re-engineer your product every three years because it has become unmanageable, continue with that practice. Otherwise, explore how some of the new SCM tools can help you get back in control of the software life cycle.

*Riehle's internet address:
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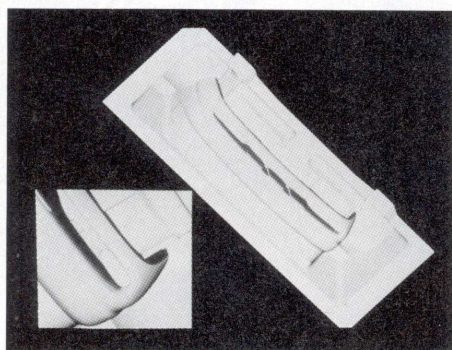
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AMT Design Analyst shows minimum draft analysis.

CIMLINC Inc. Offers AMT Design Analyst

CIMLINC Inc. shipped AMT Design Analyst, an analysis software that allows a computer to check the quality of surface geometry in the complex tools produced by the mold and die industry.

This software accurately analyzes tool geometry which is created by the tool maker or supplied by its customers before the tooling is finished and without any part tryout. Surfaces are analyzed for their inherent characteristics, then translated into color representation that are easy to understand.

It also allows quick coloring and shading of a surface model for an initial visual determination of whether any surfaces are missing or fall short of other design expectations. This is done with a library of surface material types and user-definable colors. Further photo-realism is available with CIMLINC Tool Maker and Tool Designer products.

AMT Design Analyst accepts surface geometry and model input from any CAD system. Input can be in a variety of formats including IGES, PDGS, VDA and CIMLINC.

It runs on UNIX workstations from HP, Sun Microsystems, Silicon Graphics and IBM.

Contact CIMLINC Inc., 1222 Hamilton Pkwy., Itasca, IL 60143-1138; (800) 225-7943.

Circle 400 on reader card

SPRY Announces AIR Series

SPRY Inc. announced that its AIR Series application suite for Windows is compatible with Novell's new version of its client. In addition, the AIR series supports Novell's NetWare IP product. Corporate PC users can use the AIR Series applications over the TCP/IP transports that come with the NetWare Client or NetWare IP to access local area file and print services, TCP/IP host and the Internet.

Each application suite ships with the Application to Socket (APP2SOCK) interface, SPRY's public specification enabling the applications to run over any TCP/IP transport. Applications include Telnet, tn2370, Network File Manager (ftp), X Windows server and AIR Navigator, an Internet access application that includes Mail, News and Gopher.

Single user prices range from \$149 to \$399 depending on the networking solution chosen.

Contact SPRY Inc., 316 Occidental Ave. S., 2nd Floor, Seattle, WA 98104; (206) 447-0300.

Circle 399 on reader card

Visual Action Toolset Supports UNIX, OSF/Motif

Adobe Systems and Visual Edge Software Ltd. announced the Visual Action Toolset for the Display PostScript system, a new software developer's kit for the UNIX and OSF/Motif environment.

It enables developers to build next-generation applications that take advantage of the graphics available through Adobe's Display PostScript system. The Display PostScript system offers true device-independent WYSIWYG correspondence

between the display and the PostScript output device. It also gives users access to more than 13,000 Type 1 fonts available from Adobe and other type vendors.

The Visual Action Toolset is a full suite of software libraries, widgets, fonts, sample programs and documentation that enables developers to create a new generation of graphical applications.

Initial platforms supported include workstations running SunOS 4.1.3, IBM AIX 3.2.4 and SGI IRIX. HP platforms running HP-UX 9.0.1, systems running Solaris 2.3 and Alpha-based systems running OSF/1 will be supported shortly.

Price is \$2,500.

Visual Edge Software Ltd., 3950 Cote Vertu, Ste. 100, St.-Laurent, PQ H4R 1V4; (514) 332-6430.

Circle 398 on reader card

Walker Delivers Financial Applications

Walker Interactive Systems Inc. announced the beta shipment of its client-server-based financial applications.

The first release will be installed on HP 9000 Series 800 business servers running HP-UX, and supports the Sybase SQL Server RDBMS. In addition to general ledger, the product will support a full suite of applications including asset management, accounts payable, purchase order, inventory management, project cost management, and credit and accounts receivable management (CARMS) systems on the HP platform.

Contact Walker Interactive Systems, Marathon Plaza Three N., 303 Second St., San Francisco, CA 94107; (415) 495-8811.

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Clarity Unveils Rapport Script

Clarity Software announced Rapport Script, an object-based word processor package for reports, newsletters, presentations and documentation.



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★ The Computer Museum proudly presents the All-Star Computer Bowl® which will tip off on April 29th at The Civic Auditorium in San Jose. ★ Satellite broadcast of the match will be transmitted to the Microsoft campus in Redmond and The Computer Museum in Beantown. ★ Will this turn out to be a slam-dunk for the All-Stars from the East? Or will the in-your-face style of the Western All-Stars prevail? And what on earth does basketball have to do with computers? ★ There's only one way to find out, and once again, tickets will be hard to come by since there will be no local TV play-by-play. Call (617) 426-2800 extension 399 now to reserve your seats. ★



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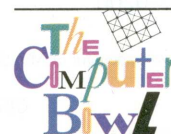
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For tickets and sponsorship information
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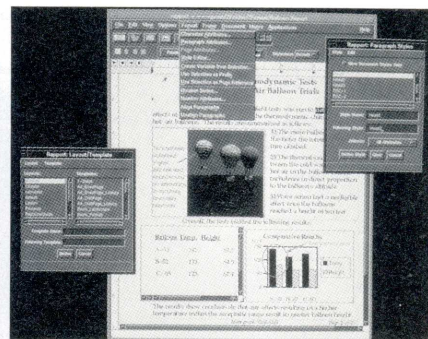
New features include: a "basic" mode with functions available by point-and-click on the control panel, and an "advanced" mode that allows power users access to sophisticated layout and formatting options; in-place creation and editing of non-text elements such as spreadsheets, drawings, charts, images and sounds; support for slide presentations; drag-and-drop inclusion of materials prepared in other word processing, spreadsheet and

graphics applications with automatic conversion; Facility for Linkage and EXTension (FLEX), which works with standard programming languages and interface tools to integrate Script capabilities with existing or new applications; and upgradability to Rapport Pro, which adds E-mail and fax capabilities to the document creation functions of Script.

It is available for HP 9000/700, DEC

Ultron and Sun SPARCstations using Motif with SunOS 4.1.4 or Solaris 2.x. Price for a single floating license is \$695. An upgrade from Script to Rapport Pro costs \$295. Contact Clarity Software Inc., 2700 Garcia Ave., Mountain View, CA 94043; (415) 691-0320.

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Rapport Script makes document creation easier

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ASK Group Inc. Ships OpenINGRES/Replicator

The ASK Group Inc. shipped ASK OpenINGRES/Replicator, an advanced data replication product.

It enables organizations to meet data reliability, availability and performance requirements by distributing and maintaining data at one or more target locations.

ASK OpenINGRES/Replicator is available on HP-UX, DEC Ultrix and VAX/VMS, IBM RS/6000 and Sun OS platforms. It supports replication to various databases including HP's Allbase, IBM's DB2 and IMS, and DEC's RMS and Rdb. Pricing starts at \$350.

Contact ASK Group Inc., 2880 Scott Blvd., Santa Clara, CA 95052; (408) 562-8200.

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Softool Corp. Announces CCC/Manager 2.1 For OS/2

Softool Corp. offered CCC/Manager release 2.1 for OS/2. The new release is targeted at software developers, technical testing staff, quality assurance personnel as well as production control and library managers, working either standalone or on a network.

CCC/Manger 2.1 for OS/2 is part of Softool's CCC (Change and Configuration Control) product family, offering life cycle management functionality across 20 platforms including UNIX, IBM, DEC and PCs.

User interface enhancements include: object orientation; modeless execution; central lists; mirroring PC directories in CCC;

support for concurrent development; a data management utility; and the incorporation of CCC/Bridge.

Contact Softool Corp, 340 S. Kellogg Ave., Goleta, CA 93117; (805) 683-5777.

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SuperView Displays Multiple Video Windows

RGB Spectrum announced SuperView, a multiple video windowing system that displays up to four real-time windows on a single high-resolution monitor. Each video window can be positioned, scaled to full screen, overlaid with computer graphics or overlapped with other video windows.

SuperView is a third-generation system based on a proprietary design that guarantees real-time video performance without burdening the host CPU or graphics controller. It accepts NTSC (or PAL) composite video and Y/C (S-Video) signals from up to four cameras, tape recorders, video disk and teleconferencing systems simultaneously. It also accepts high line-rate video signals from FLIR and medical imagers.

The system supports software control to manipulate the video windows, adjust video parameters and control graphics overlays. RGB Spectrum's optional X.TV software provides full integration under X Windows. Contact RGB Spectrum, 950 Marina Village Pkwy., Alameda, CA 94501; (510) 814-7000.

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Telebit Introduces Intuitive User Interface

Telebit Corp. introduced a Windows-based GUI called the NetBlazer Configuration Utility for its NetBlazer product family. It allows customers to intuitively set up, update and manage NetBlazer networks in a manner of minutes.

The NetBlazer Configuration Utility provides an easy-to-use, point-and-click mouse operation to smoothly guide the user through the task of configuration and management.

The utility offers two levels of operation. QuickStart matches the needs of the occasional network manager by guiding the user through LAN-to-LAN and client-to-

LAN configuration as well as modem pooling for TCP/IP, IPX and Apple ARA users. The Expert mode takes more experienced NetBlazer network managers deeper into the network.

Contact Telebit, One Executive Dr., Chelmsford, MA 01824; (508) 441-2181.

Circle 391 on reader card

GDT Softworks Acquires Plotter Driver Technology

GDT Softworks Inc. acquired PLOTTERgeist and DesignPlot plotter driver technology from Palomar Software.

Developed for the CAD community and others who need large-format output, the PLOTTERgeist and DesignPlot product families provide connectivity solutions for a variety of plotters. The three products offer similar functionality, including high-quality text and graphics support, background plotting, document preview, save-to-disk portability and the Palomar user interface.

PLOTTERgeist costs \$399 and offers drivers for pen plotters and vinyl cutters. DesignPlot, a color and grayscale driver to the

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Unison-Tym Labs is a supplier of networked systems management solutions for both UNIX and MPE. Product areas include workload management, storage management, print automation and desktop integration. Call (408) 245-3000

WRQ (WALKER RICHER & QUINN) CIRCLE 263

Makers of Reflection Series Software. HP terminal emulation for PCs and Macintoshes. Call (800) 872-2829.



*The publisher does not assume any liability for errors and omissions.

HP DesignJet family of inkjet plotters, costs \$599 and supports plotters connected via serial, parallel or EtherTalk networks. DesignPlot/T costs \$799 and combines DesignPlot functionality with a LocalTalk interface adapter to provide plug-and-play network connectivity for DesignJet plotters. Contact GDT Softworks, 4664 Lougheed Hwy., Ste. 188, Burnaby, BC V5C 6B7; (604) 291-9121.

Circle 392 on reader card

Spyglass Inc. Provides Visual Data Analysis

Spyglass Inc. expanded into the Windows and Windows NT marketplace with Spyglass Transform and Spyglass Slicer.

Already established in the Macintosh and UNIX markets, Spyglass Transform is a visual data analysis tool that allows scientist and engineers to analyze large matrix and image datasets. Surface plots, color raster images, line graphs, contour plots and vector plots can be created from matrix data arrays with simple point-and-click operations that require no programming.

Its data import capability allows users to import datasets from ASCII spreadsheet files or binary data files. It also automatically reads MATLAB, GIF, PBM and XWD files, as well as FITS, HDG and TIFF files.

Spyglass Transform also includes a macro scripting language that gives users explicit control over all Transform functions.

Spyglass Slicer is a volumetric visualization tool for Windows and Windows NT. Features include: isosurfacing, oblique slicing, advanced voxel-based ray tracing, fast front-to-back rasterizing, and key animation scripting and generation.

For Windows and Windows NT, Spyglass Transforms costs \$595 and Spyglass Slicer costs \$695.

Contact Spyglass Inc., 1800 Woodfield Dr., Savoy, IL 61874; (217) 355-6000.

Circle 389 on reader card

AutoSIGHT Announces AcadView 2.0

AutoSIGHT Inc. released AcadView 2.0, a high-performance CAD utility that lets non-CAD users and CAD professionals view AutoCAD drawings on their desktop PCs.

AcadView is a compact viewing program that displays AutoCAD drawings in less than 300K of RAM. New features include an integrated set-up program that allows users to modify their view options, video mode or background color without exiting the program. AcadView 2.0 also includes: fast display of AutoCAD DWG and BAK

drawings release 2.5 to 12; zoom and pan support; 3D viewing; full screen views; and a file selection dialog box that allows users to open drawings with the click of a mouse or stroke of a key.

Price is \$49 for a single user license. Network versions start at \$149 for five users. Contact AutoSIGHT Inc., P.O. Box 362086, Melbourne, FL 32936; (407) 242-5865.

Circle 388 on reader card

Atria Integrates ClearCase And ProTEAM

Atria Software Inc. released ClearCase/ProTEAM Integration software, which combines Atria's ClearCase configuration management software with Scopus Technology's ProTEAM problem tracking software. The product supports interoperability by updating each product's database as operations are performed by users.

Thanks to Harmonizer, over 1400 Aldon customers are humming a new tune about installing new packaged software releases.

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The ClearCase/ProTEAM Integration improves the accuracy and timeliness of essential information on software bug status, work-in-process and code quality. Key features include integrated query and reporting facilities across the two products.

ClearCase provides advanced version control, workspace management, build management and process for UNIX-based software development teams. ProTEAM is a set of information management tools, including bug tracking facilities, used by development teams to establish automated procedures for handling software defects, as well as modules for customer support and sales lead management.

ClearCase/ProTEAM Integration is available for HP and Sun UNIX workstations. Price is \$2,500 per site. Contact Atria Software Inc., 24 Prime Park Way, Natick, MA 01760; (508) 650-1193.

Circle 387 on reader card

Woodside Attacks UNIX Security Problem

Woodside Technologies Inc. announced FORTRESS Challenge, which puts UNIX system security to the test by offering a free security audit. Users can implement a free version of FORTRESS, and if they can't find a security problem, then the software is theirs to keep for free.

FORTRESS is a comprehensive UNIX security solution. The software prevents unauthorized system entry by eliminating the possibility of easily cracked passwords, oversights in system administration or uncorrected system bugs. FORTRESS limits the potential damage by monitoring for suspicious activity through a continuous set of security checks. It also can keep a series of DES encrypted audit logs that facilitates the restoration of a clean system in the event of a security breach.

FORTRESS is available for HP platforms, SPARCstation systems running SunOS 4.1 and Solaris 2, and IBM RS/6000 systems running AIX 3.2.

Contact Woodside Technologies Inc., 474 Potrero Ave., Sunnyvale, CA 94086; (408) 733-9503.

Circle 390 on reader card

Momentum Provides Support For POSIX

Momentum Software announced support for POSIX and other threads-based environments for its X-IPC middleware product line. This will allow corporate developers, systems integrators and software vendors to fully exploit the threads capabilities available in

POSIX, DCE, Solaris, UNIX SVR4, OS/2, Windows NT and OSF/1.

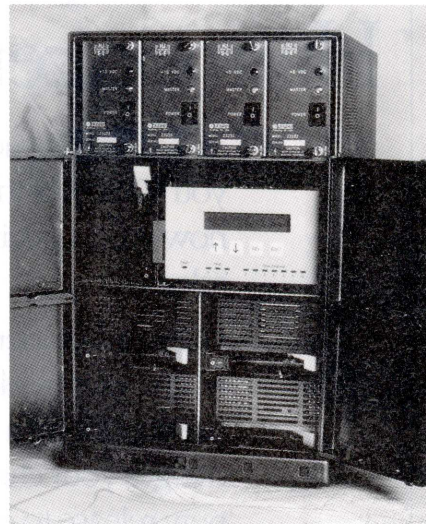
X-IPC is a software toolset for the development of multitasking and distributed applications for the UNIX, VMS, OS/2 and LAN environments. It resides between an application and its underlying operating systems and protocols environments. It provides an API for performing consistent, traditional UNIX-like interprocess communication (IPC) that is independent of, and transparent to, the underlying operating system, network protocol or hardware platform.

X-IPC has built-in support for three mechanisms of interprocess communication: semaphores, shared memory and message queues.

Contact Momentum Software Corp., 401 S. Van Brunt St., Englewood, NJ 07631; (201) 871-0077.

Circle 385 on reader card

HARDWARE



ULTIMA RAID can configure a fault-tolerant server for up to 28 disk drives.

R Squared Releases ULTIMA RAID

R Squared announced ULTIMA RAID, which features fault tolerance, high reliability and multiple RAID modes. It also adds functionality with redundant power supplies, failure alarms, high-performance system administration software, hot swapping of disk drives and redundant fans.

ULTIMA RAID can be user-configured in three RAID levels: Level 0 provides high I/O rates where data security is not a high priority; Level 3 provides a large bandwidth

for large-block transfers and data security. Level 5 provides high I/O rates for small block transfers and data security.

It allows users to configure a fault-tolerant server with up to 28 disk drives.

Contact R Squared, 1121 E. Arapahoe Rd., Englewood, CO 80112-9947; (303) 799-9297.

Circle 384 on reader card

Chase Research Introduces IORACK

Chase Research announced IORACK, a rack mount terminal/communications server for UNIX- and TCP/IP-based systems.

IORACK provides eight or 16 RJ45 asynchronous ports for connecting modems, terminals, printers or data acquisition devices to TCP/IP networks. IORACK applications include remote dial-in LAN access, network printing and high-speed serial data transfer.

IORACK features a menu-driven configuration system for ease of installation. Each port is individually monitored and provides baud rates of up to 115.2 KB with full modem control. Additional IORACK features include BNC/AUI connections, multisessions, SNMP, SLIP, Telnet, rlogin and tftp.

Price of the eight-port version is \$1,795, and the 16-port version is \$2,495.

Contact Chase Research Inc., 545 Marriot Dr., Ste. 100, Nashville, TN 37214; (615) 872-0770.

Circle 383 on reader card

Toshiba Expands Satellite T1910 Series

Toshiba America Information Systems Inc. (TAIS) introduced a full-featured, fully-integrated 33 MHz i486 notebook computer to its Satellite series.

The Satellite T1910 comes with a Dynamic-STN dual-scan color or STN monochrome display, a 14.5mm PCMCIA "hot-plug" expansion slot, a keyboard, a 1.44-inch integrated floppy disk drive, a minimum of 120 MB hard disk drive capacity and a BallPoint Mouse 2.0 with QuickPort for control and accuracy.

MS-DOS 6.2, Windows 3.1 and UltraFront are pre-installed on the hard disk drive. The T1910 offers a 9 1/2-inch, high-contrast STN-monochrome VGA display with a 640 x 480 resolution. The T1910CS offers Dynamic-STN dual-scan color on a 9 1/2-inch VGA screen with 630 x 480 resolution. Both feature a graphics accelerator to enhance video performance in Windows.

The Satellite T1910 models include an 33 MHz SL Enhanced i486SX CPU. The

microprocessor also includes 8 KB cache. Toshiba offers system memory of 4 MB, expandable to 20 MB using 4, 8 or 16 MB user-installable memory cards. Hard drive capacity is 120 MB on the both models. A 200 MB option is available on the T1910CS.

Price ranges from \$1,599 and \$1,699 for the T1910, and from \$2,299 to \$2,499 for the T1910CS.

Contact TAIS Inc., P.O. Box 19724, Irvine, CA 92713-9724; (714) 583-3925.

Circle 382 on reader card

ComArt International Releases TeleCentral

ComArt International announced TeleCentral, a standalone LAN telecommunications server that uses an i486 central CPU surrounded by multiple co-processors and disks to enable powerful voice, fax and data applications on four to 32 phone lines per chassis. Multiple chassis may be linked for additional capacity.

TeleCentral uses simple English scripts to create applications for automated phone attendant, voicemail, company directory, fax-on-demand, interactive voice response, voice-text applications and LAN fax services.

The unit comes with pre-configured hardware components and pre-loaded software. It is shipped with samples, a development toolkit and a run-time environment.

TeleCentral costs \$6,995 for a four-port system with two voice and two fax lines, and \$9,995 for the eight-port system with four voice and four fax lines.

Contact ComArt International, P.O. Box 1450, Lake Forest, CA 92630; (714) 859-2000.

Circle 381 on reader card

HP Supports EXB-8505

Exabyte Corp. announced that HP will support the EXB-8505 8mm Cartridge Tape Subsystem on HP 9000 Series 800 workstations. The EXB-8505 is a half-height tape drive in a 5 1/4-inch form factor with a 5 GB native capacity and a 500 KB per second transfer rate. With compression, the drive can store 10 GB and transfer data at 1 MB per second.

The 8mm subsystem will be available in field-installable kits for HP's business servers, mini-towers and 19-inch EIA racks. The kits can be integrated into an external storage or CPU enclosure.

The EXB-8505, a SCSI-2 device, is read/write compatible with the entire Exabyte family of 8mm products.

Contact Exabyte Corp., 1685 38th St., Boulder, CO 80301; (303) 442-4333.

Circle 380 on reader card

Pacific Rim Systems Produces PCMCIA Card

Pacific Rim System Inc. announced their PCMCIA Multi Drive I/O Card. The Type II card contains all the electronics necessary to simultaneously control CD-ROM, floppy, fixed hard, removable cartridge hard, QIC-80 tape, QIC-3010 tape and QIC-3020 tape drives.

The first drive connects directly to the Multi Drive I/O Card and subsequent drives may be daisy-chained.

Capacity and type are sensed and logged automatically, without user intervention. Hard drive transfer speeds similar to internal drives can be achieved. Both single- and double-speed CD-ROMs are supported.

QIC-80 tape drives capable of 1 MB per second transfer speeds will stream between 7 and 11 MB per minute depending on the level of compression.

Price is \$199.

Contact Pacific Rim Systems Inc., 2655 Barrington Court, Hayward, CA 94545; (510) 782-1013.

Circle 379 on reader card

Scope Offers LAN Analyzer And Cable Tester

Scope Communications introduced FrameScope 802 and WireScope 100.

FrameScope 802 is a pocket-sized LAN analyzer for Ethernet and Token Ring. It has a built-in UTP port and AUI Adapter port. The plots tool graphs any two network statistics simultaneously, which can be used to compare frame and error rates. It also includes a traffic generator tool that simulates up to 200 stations.

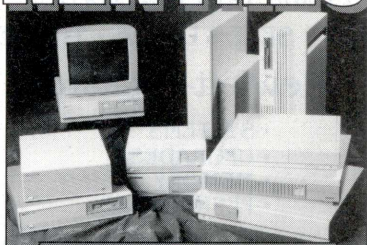
WireScope 100 certifies cable to EIA/TIA Category 5 specifications, necessary for applications like TP-PMD, ATM and 100BaseX. It displays test results as simple "pass/fail" answers, or displays complete details on near-end crosstalk (NEXT), attenuation, background noise and cable length. It also identifies shorts, opens, split pairs, reversed polarities and measures distance to fault.

Price for FrameScope 802 starts at \$3,995. Contact Scope Communications Inc., 100 Otis St., Northboro, MA 01532; (508) 393-1236.

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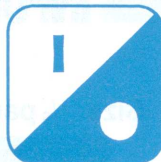
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No Longer An Open And Shut Case

It's Hard To Get Complete Support With Multivendor Systems



By Gordon
McLachlan

The allure of open systems is the ability to mix and match solutions. Unfortunately, that's also a guaranteed recipe for support problems.

The attraction of open systems is undeniable. Cheap hardware, application portability and the ability to mix and match solutions is quite alluring. Unfortunately, that's also a guaranteed recipe for support problems. The sheer number of combinations you can come up with — considering hardware, operating systems, and database and applications software alternatives — makes it next to impossible for any one vendor to protect you under an effective support umbrella.

When IBM pitches its AS/400 systems — a proprietary cash cow that still adds billions to their bottom line — their ace in the hole is the total cost of systems ownership, including software and support. Given IBM's history of indifference to open systems, I always thought this was a bit of a smoke screen, but they may actually have a point.

Support is a noisome enough business without arguing over whose fault a problem might be. But, unless you have a simple, isolatable problem, finger-pointing is inevitable. As soon as you give a vendor an opportunity to point to another vendor's product as the source of your problems, you're in support limbo.

If IMAGE doesn't work right on your proprietary 3K, you and HP both know who is responsible. You call the customer response line, and hopefully, you get an answer. If not, HP will send a support representative to your site to take a look. Things may or may not get fixed as quickly as you would like, but at least you know someone is on the case. And, you know who to lean on.

My company recently ran into a problem with an HP 9000, Informix On-Line and a canned application built with Informix 4GL and Structured Query Language — about as open a solution as you could want. The application, which we resell, had been

working fine. Then for God only knows what reason, it decided to start bombing out with a cryptic error message from the Informix database engine.

At first, all eyes were on the application package as the probable culprit. After some preliminary checking, however, it became evident that the problem was not with the application. By this point, even some of the Informix diagnostic tools were blowing out, indicating a more menacing problem, so we pointed the finger at Informix.

The error message we were getting was one of those that users aren't ever supposed to see. Unable to duplicate the problem themselves, Informix pointed the finger back at HP and said there must have been some problem with the way the system was set up.

Calls to HP got a quick response, but they too quickly pointed the finger: "We can't find anything wrong. What does Informix say?" Calls back to Informix got us plugged into a voicemail system, but no answers were forthcoming. In the meantime HP gave it another shot, sending out a support rep, but outside of a couple of tweaks, everything seemed fine. But the problem was still there.

This left a very frustrated customer in the middle. We then became the de facto owner of the problem because we were within easy reach. Figuring we didn't have much to lose, we did the best we could and reloaded UNIX and Informix from tape. In the process, we hoped to magically flush out the unknown gremlin. It didn't seem hopeful, but at least it was something to do.

Eventually, Informix confessed that it was indeed their problem, but the only short-term solution was to drop back to their Standard Engine, which doesn't provide the same performance as Informix On-Line. It was a solution, but an incomplete one. As I write this, we're still waiting for the real fix to arrive.

So as the customer, you pay HP and Informix megabucks for support, and incur serious time-and-material bills from the application reseller for playing monkey-in-the-middle. But you still don't have the problem fixed. Makes you kinda yearn for the good old days, doesn't it?

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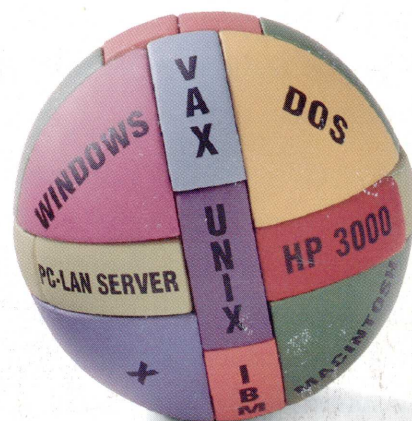
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